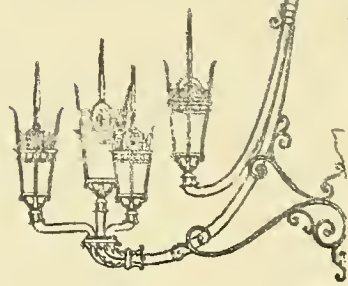


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TO THE STATE: A MUNICIPAL FINANCE ALTERNATIVE

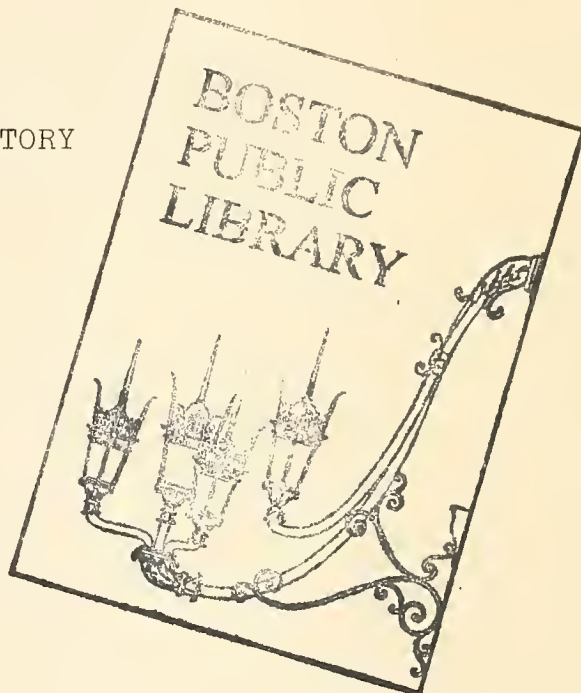
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THE BOSTON URBAN OBSERVATORY

October, 1973



Prepared by

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SUMMARY OF FINDINGS AND CONCLUSIONS

Criteria For Shifting of Services

This report recommends that the administration and/or financing of a selected group of public services be shifted from municipalities to the state government in Massachusetts.

Several criteria are used to identify local functions and local fiscal responsibilities which are more suitable for state than local financing. The first criterion is the efficiency of delivery of the service: for some functions, such as solid waste disposal, technology makes it more costly per capita to provide the service separately through individual municipalities than to operate regionally-based waste disposal facilities. The second criterion is the degree to which residents of the service area are agreed as to the quantity or quality of the service to be provided. The greatest degree of consensus can always be found at the lowest jurisdictional level, but this report argues that for the services selected for shifting, state financing will not result in service levels too different from any one municipality's preferences. For example, there is not likely to be much dispute among municipal officials as to correctional institution standards. Third, the report recommends shifting services which have significant "spill-in" or "spill-out" characteristics; that is, when municipally-financed, they benefit or adversely affect residents of other local jurisdictions which have no voice in their delivery, on the one hand; and on the

other hand, services with these characteristics involve costs without commensurate benefits to the responsible jurisdiction and eventually generate taxpayer resistance which forces severe reductions in service levels. Vocational education and transportation are two good examples of this phenomenon. The fourth criterion is that the area taxed to provide any service which effects a redistribution of services or cash (e.g. health and hospitals, veterans' assistance) should include enough persons in both groups to make redistribution worthwhile: enough of those we wish to redistribute from and enough of those we wish to redistribute to. A great many municipalities in Massachusetts are somewhat internally homogeneous with respect to income; that is, the incomes of residents of any one community are likely to cluster. This tendency inhibits the provision of services with redistributive objectives which might significantly change the relative inequality of opportunity or well-being.

In addition, the report notes that over-dependence on the local property tax has both inefficient and inequitable consequences which can be somewhat alleviated by any kind or measure of property tax relief.

Impacts on Affected Governmental Jurisdictions

The total impact of the shift of services on affected governmental jurisdictions is elaborated in detail in Chapter II. Chapter II also summarizes the method of calculation and explains the underlying assumptions. The governmental impacts may be capsuled as follows: the total estimated savings to the City of

Boston of the proposed shifts in 1973 (using both actual 1973 figures and 1970 figures which have been corrected for inflation) would be \$90,495,000. The estimated savings to all other municipalities in 1973 would total \$190,168,000. Since local savings would be in the form of property tax relief, Boston's tax reduction would be equivalent to about 26 percent of the 1973 property tax levy; tax reductions to all other municipalities would amount to about 11 percent of their aggregate 1973 property tax levy. With the anticipated changes in service levels once the state assumes the administration and/or financing of the services, the Commonwealth's total obligation will increase by an estimated \$363,182,000.

Two alternatives were explored for financing the additional state expenditures. Under the first, approximately \$93,200,000 of the overall increase was allocated to the state motor fuel tax and \$135,000,000 each to the state income tax and the state sales tax. This proposal would mean an increase of four cents per gallon in the motor fuel tax, and an increase to five percent in the sales tax. As for the income tax component, in order to make incidence calculations, the assumption was made that the additional funds would be raised by levying a surcharge on the present state income tax bills, rather than inferring what kind of tax rate and tax base configurations might be designed to raise the additional revenues. This would mean a tax surcharge of 18 percent on present tax bills.

The tax arrangement under the second alternative is also \$93,200,000 for the motor fuel tax, while the remainder of

\$270,000,000 is allocated to the income tax. This additional income tax levy is equivalent to a surcharge of 36 percent on current state income tax bills.

Tax Incidence

On the basis of a series of assumptions generally accepted by the economics profession concerning the overall patterns of incidence of property, income and sales taxes and applying these assumptions to data for the City of Boston, Chapter III of this study has empirically estimated the incidence on specific classes of residents. Calculations were made of the changes in total tax payments (property taxes to municipalities; income, sales, and motor fuel excise to the State) made by representative households, characterized by household size and annual income, which would emerge from the proposed shifts in service responsibilities. The results indicate that in total, Boston residents would pay less in taxes to the City and the State after the shift. Within the City of Boston they show that one of the consequences of the shifts to state financing, would be a tax burden which is less regressive i.e. more equitable across households. The tax burden changes from its present relatively heavy weight on low-income resident families to a greater sharing of the burden by higher income groups. This result is due to the lesser regressivity of state taxes (notably the income tax) than the local property tax.

The incidence on residents of other municipalities of the state was not examined in this report, and would require similar detailed information and analysis of the characteristics of the

local tax bases and of their resident populations. The residents of some communities may fare as Boston residents have; others will not. Although the tax impact on different resident groups within particular municipalities was not determined, observations can be made about the aggregate results. Because the proposed shifts in financing include some changes in service levels (bringing all municipalities up to uniform service standards, for example), the shifts as outlined mean an increase in total expenditures; that is, the state government will spend more for the services after the shifts are implemented than the municipalities are currently spending for such services. This implies that some residents of the state will be paying higher total taxes once the shifts are completed. There are two potential offsets to the magnitude of such increases, however; first, state taxes (especially the income tax, because of federal deductibility) are more "exportable" to residents of other states. Second, the improvement in tax efficiency (especially the alleviation of some of the distortions caused by the property tax) should bolster the total economic activity of the state which is subject to taxation. Moreover, the statewide interpersonal incidence should be similar to the impact demonstrated for Boston; that is, tax burdens would be shared to a greater degree with the state's higher income inhabitants. This report also indicates that the change in burden, both among governmental jurisdictions and among classes of households, is consonant with one of the following desired objectives, depending on the specific public service being shifted: (1) greater efficiency (those who receive the benefits of government services should pay), (2)

greater equity (those who have the "ability to pay" should pay their fair share).

This study has attempted to advance in several ways the continuing discussion of the appropriate allocation of governmental responsibilities in the provision of public services. Past studies and theoretical analysis have helped to provide a framework for deciding how services should be assigned among levels of government. In addition they show the inefficiencies (caused by administrative problems or externalities) of the present patterns and arrangements. The implicit assumption in these studies is that the reallocation of governmental responsibilities along the lines of the criteria previously described, by bringing savings to local governments, will automatically benefit local residents.

This study also builds on previous research by adopting a similar framework for analyzing which municipal responsibilities should be shifted to the state level in Massachusetts. However, the analysis of these issues is carried one step further by detailing the actual costs involved in transferring the responsibilities and indicating the impact on central city residents. The assumption that city residents will benefit if service and financial responsibilities are altered so as to achieve governmental efficiency is supported empirically by the investigation of the incidence of the shifts from local to state taxes. Residents of the city pay taxes to the city, the state, and the federal government. The shifting policy, which decreases city taxes and increases state taxes, obviously benefits the city

government, and this study shows that it also benefits most of the residents of the City of Boston. The case for such a shift is made stronger by the examination of how the shift will affect the real income position of representative city residents. The study demonstrates that a move toward greater equity and efficiency in the assignment of governmental responsibilities in Massachusetts also provides the opportunity through changes in financing to bring about a more equitable distribution of total tax burdens.

FOREWORD

This study is one of a series of national agenda comparative projects in policy research carried out under auspices of the Urban Observatory Program. It demonstrates the cooperative effort of a group of central cities with relatively large populations and similar problems to perform policy research within the framework of a general consensus concerning hypothesis, research methodology and expected output. Moreover, it experiments with the comparative research technique in an area of policy which has the highest priority on the urban agenda, municipal finance.

The basic strategy of this study, that administration and/or financing of selected municipal services should be shifted to the state, is an underdeveloped approach to solution of the municipal finance problem. Thus its major thesis advances the growing body of literature dealing with rationale for assigning functional responsibilities to various levels of government. Moreover, the comprehensive framework which underlies the conceptualization of the strategy is somewhat unique, as is the detailed analysis of costs and benefits to affected governmental jurisdictions implied by the service transfers. Finally, the in-depth inquiry of the tax incidence for households of varying incomes in the City of Boston resulting from the shifts of municipal service and financial responsibilities to state taxes takes policy research in municipal finance a major step forward by pointing out precisely who gains and who benefits at the taxpayer source and by how much.

Dr. Roy Bahl of Maxwell Graduate School, Syracuse University, is coordinating this municipal finance research project and is preparing a synthesis report drawing on findings and conclusions of the studies undertaken by urban observatories in Atlanta, Baltimore, Boston, Denver, Kansas City, Milwaukee, Nashville, and San Diego.

The project director acknowledges the conscientious, skillful contributions of his two principal colleagues, Katherine Bradbury and Philip Moss of M.I.T. We are also indebted to Donald R. Courtney, formerly of the Administrative Services Department of the City of Boston for the careful analytical work covering services in the public safety and county court categories.

The study could not have moved expeditiously without the continuing wise counsel of Professor Dan Holland, Sloan School of Management, M.I.T. and without the useful guidance at critical stages of Walter Vogt and Sheldon Mann, both of the Metropolitan and Regional Research Center, Syracuse University.

The research team extends its deep gratitude to Dorothy Anderson of the Boston Urban Observatory for completing an arduous task of preparing the final text and for shepherding the manuscript to an ultimate product.

Finally the extraordinary scope and breadth of this study required the cooperation of virtually hundreds of employees working at all levels of state and municipal government. This report is a tribute to their patience, insights and assistance.

Joseph S. Slavet, Director
Boston Urban Observatory

I. INTRODUCTION

Background of Study

This report picks up where the initial Boston Urban Observatory (BUO) report on municipal finance leaves off.¹ The latter study found that "the chronic crisis in municipal finance in Massachusetts is essentially an over-worked property tax."² By 1972 property taxes per capita in this state had reached \$353 and are now estimated to rank highest among the 50 states of the nation. Moreover, the BUO report attributed an important cause of this over-dependence on property taxes to:

1. Failure to reallocate traditional patterns of functional responsibility as between local and state governments, and
2. Failure to shift the financing of certain costly services -- health and hospitals, veterans' benefits, courts, corrections, mass transit, regional parks and recreation, regional sewage treatment and disposal, etc. -- away from property taxes to broad-based, statewide sources of revenues...³

Thus, this follow-up study of municipal finance adopts the above conclusions and settles on a services shift/financing re-allocation strategy as a relatively untried variant for coping with a local fiscal problem which continues to be serious notwithstanding a series of steps taken during the past few years to ease municipal fiscal pressures.

A summary of the magnitude of the local fiscal problem, drawn from the first BUO study, may be useful in setting the stage for the detailed discussion of the rationale and the implications of a reallocation strategy for state-local governments and residents.

By 1972, only five years after having surpassed the one-billion dollar mark, property taxes in Massachusetts had climbed above the \$2 billion level (to \$2.050 billion). While it had taken 10 years from 1960 for property taxes to double (from \$698 million in 1960 to \$1.401 billion in 1969), particularly heavy pressures on local finances since 1967 effected almost a further doubling of property taxes within half a decade (from \$1.076 billion in 1967 to \$2.050 billion in 1972).

During the 1967-72 period the annual rates of increase for municipalities in the state as a group ranged from 10.6 percent to 16.3 percent, the average yearly increase for the six-year period being in excess of 13 percent. However, the annual rates of increase in property taxes have declined somewhat during the past two years. Thus, if the average annual rate of increase during the 1973-75 period is conservatively predicted to be at the 10 percent level, total property taxes will reach \$2.7 billion by 1975.

The BUO report also concluded that the scale of general revenue sharing initiated by the federal government late in 1972 (scheduled for gradual but modest expansion over the next five years) and the upward trend in state financial assistance to cities and towns (mainly distributions for general school purposes and special categories of school program reimbursements) are not likely to counteract to any significant degree the continuing financial pressures on municipal government in the state.

Recent infusions of general revenue sharing funds from the federal government and modest increases in state financial

assistance to cities and towns through state aid formula changes, the state lottery, and additional highway aid at best will mean a short-lived, temporary respite from escalating property taxes. Moreover, the prospect for major expansion of federal revenue sharing in the near future is not bright and major proposals by the State Master Tax Plan Commission to limit property taxes to 40 percent of total state-local revenues was based on assumptions which proved to be tenuous. During the 1970-72 period alone, total property taxes in Massachusetts increased by \$420 million, thereby completely wiping out the \$300 million in property tax reduction estimated by the Master Tax Plan Commission as the outcome from implementing its major recommendations. To make property taxes in Massachusetts competitive with those of neighboring states would require a shift of at least \$600 million away from local taxes.

Alternative Strategies⁴

There are four general approaches available which individually or in combination could be considered in conceptualizing an all-out attack on the municipal finance problem in Massachusetts.

One strategy might be called a do-it-yourself strategy, under which additional funds are raised from existing and/or new local sources of revenue. This has limited potential in a state where the legislature has restricted cities and towns by and large to property taxes and where uniformity provisions in the state constitution and tax policy tradition mitigate against giving municipalities wide discretion in levying taxes. Thus, except for taking full advantage of opportunities to keep user charges

current with costs and for adopting additional user charges where politically, administratively and economically feasible, municipalities would find only limited potential in this strategy for raising large amounts of revenue. Even in a city the size of Boston, it is doubtful that new user charges, revised user charges and improved collection of present charges for services could increase total revenues (about \$500 million in 1972) by more than two or three percent.

A second strategy, which is another aspect of the do-it-yourself approach, applies to the expenditure side. This covers decisions designed to effect cost reduction, program reduction and program elimination, which are generally adopted as last-ditch measures when all other options have failed. But this, too, has limited utility for large-scale alleviation of property tax pressures. At best, such a strategy can help curb the rising tide of expenditures and/or hold the tax line for a limited period of time but can hardly be applied as a major weapon for bringing property taxes back to competitive levels. The City of Boston resorted to this strategy in 1972 to effect about a two percent reduction in appropriations for operating agencies over the prior year through a variety of program decisions, including eliminating the Department of Civil Defense, restricting total appropriations of the Health and Hospitals Department to an amount which would keep the City's subsidy from going beyond its current level of \$12 million, and terminating the harbor patrol activity of the Police Department.

State and federal aid, a third optional strategy, has been on

the steady rise in Massachusetts in recent years, but shifting aid formulas, erratic annual distributions, earmarking of assistance for discrete functional purposes, and levels of financial relief too low to offset rising expenditures to any appreciable degree have limited the relative effectiveness of this selective approach. Most state aid measures have been piecemeal and sporadic rather than comprehensive in scope. State aid has focused primarily on education; a minimum of attention has been given to the state aid requirements of non-school functions. As for federal aid, general revenue sharing, amounting to \$122.3 million for local governments in 1973, is not destined for significant expansion in future years. At the present scale of assistance, federal revenue sharing is equivalent to only about half the total average annual increase in property taxes. The state aid approach should not be discounted, however. It can be coupled, mainly as a financing mechanism, to cover the costs of the fourth strategy, chosen as the major focus of this report.

Basic reallocation of municipal responsibilities, by shifting the administration and/or financing of a selected group of functions to state government, is the feasible comprehensive strategy for re-shaping the role of municipal government in Massachusetts to one which is consistent with the realities of local tax resources and municipal capabilities.

FOOTNOTES
TO
CHAPTER I

1. Boston Urban Observatory, Impact of the State-Local Tax Services Mix on Municipal Finances in the Boston Metropolitan Area: A Preliminary Evaluation (Prepared by the Bureau of Public Affairs, Boston College, December, 1972).
2. Ibid., p. 9.
3. Ibid.
4. For a similar analytical framework, see Dick Netzer, "The Budget: Trends and Prospects", in Lyle C. Fitch and Annmarie H. Walsh (eds), Agenda for a City: Issues Confronting New York (1970, Institute of Public Administration, N.Y., Sage Publications, Beverly Hills, Calif.)

II. REALLOCATION OF RESPONSIBILITIES AND/OR FINANCING FOR SELECTED MUNICIPAL SERVICES TO STATE: RATIONALE AND ANALYSIS

Introduction

For the last fifty years the federal and state proportions of total public expenditures in the nation have been rising, reflecting two important trends: (1) the shift of the direct responsibility for some functions or parts of functions from municipal to federal and state levels of government, and (2) greater financial participation by federal and state governments in functions which municipal governments continue to administer. This movement has been affecting Massachusetts to a lesser degree than other states, however, because the range of services performed at the local level in this state is greater, and by and large, the prevailing service standards are higher than in most states. The long history of most municipal services in Massachusetts (municipal functions ante-date their counterparts in state government), the pioneering and experimental traditions in selected services and other factors help to explain the relatively generous standards of municipal services in the large metropolitan areas of Massachusetts. Thus, except for two major events during recent years in state-local service/fiscal relationships--transfer of the welfare function from cities and towns to the Commonwealth of Massachusetts and a steady increase in the state proportion for local school financing -- the general pattern of service responsibilities and financing as between state and local government has not changed significantly during the past half-century.

Before reviewing the application of certain principles derived

from economic theory that are relevant to the question of which levels of government should provide which services, it should be pointed out that while economic theory is only one way of looking at the question of the most effective jurisdictional and financing arrangements for providing services, its utility derives from the fact that two of the most important general considerations for determining the assignment of functions are: (1) efficiency in the allocation of public resources (this is interpreted to mean either trying to improve quality or decrease costs in a general sense), and (2) equity in the distribution of benefits and burdens from the delivery of public services. On both of these counts, economic theory has something to contribute in considering public sector options.

Specific Economic Criteria¹

Economic theory suggests that the responsibility of the public sector is to carry out functions that private markets cannot perform adequately. To alleviate the inefficiencies of externalities, to stimulate competitive behavior and monitor the operation of markets, and to modify the distribution of income are three of the most important goals of public sector activity. Additional consideration must be given, however, to the question of which public functions should be provided by which levels of government. Some goals for public sector action which may be used as guidelines for determining the appropriate level of government are:

(1) Efficient provision of collective action. This includes administrative considerations as to which level can best manage the function as well as technological considerations as to

what service area represents the optimum jurisdiction from the point of view of minimizing private and social costs.²

(2) Minimization of political externalities. When governments act, external costs will be imposed on those residents whose needs or desires differ from the government's actions, unless the area is homogeneous with respect to its particular service requirements or desires. For example, since smaller governmental jurisdictions generally have more homogeneous populations, this criterion emphasizes home rule at the most local level.

(3). Avoidance of inter-jurisdictional externalities. Many services provided by an agency of one jurisdiction either benefit or harm members of other jurisdictions although this external effect is neither priced nor fed back into the decision-making process of the decision-making jurisdiction. This external effect might be a particular physical externality such as pollution or highway noise and congestion created in one jurisdiction which affects the residents of other jurisdictions. Or it might be the availability to residents of outlying jurisdictions of some city-provided and financed services. This criterion suggests the desirability of assigning the administration and financing of services to that level of government which is large enough to encompass all persons affected by the provision of the service.³

(4) Redistribution of income. Governmental action redistributes income directly by programs such as income supplements and welfare payments, but also indirectly in many of its other programs by taking resources disproportionately from some people and distributing the services financed thereby to others. If the intent of a service is to redistribute income and/or well-

being, then the governmental jurisdiction providing the service should be large enough to cover a population characterized by adequate wealth and heterogeneity to make this possible.

For each of the specific services in the service package proposed to be shifted to the state described in the following section of this chapter, one or more of the above criteria is applicable. In some cases technological relationships have changed which make inappropriate the assignment of particular services to the municipal level, an assignment which is rooted historically in an emphasis on local home rule and services to property. This applies, for example, to the case of solid waste disposal in Massachusetts, where experience indicates that it may take the ultimate power of state intervention to intercede among the jurisdictions in order for each local governmental entity to consider total system costs and benefits rather than only local needs and costs. The hoped-for consequence of statewide intercession is that all affected municipalities end up with access to better disposal facilities with little or no increase in costs. Veterans' benefits provide an example of a function the intent of which is to redistribute income, and the financial responsibility should be shifted to higher levels of government of adequate scope and resources to achieve this objective. A similar argument holds for health and hospital services. As for corrections, this is an example of a service which, it may be argued, should be shifted on grounds of better quality service and administrative capacity at the higher state level of government. These considerations are discussed in detail for each

service later in this chapter.

Longer Run Considerations

All of the above considerations are static in nature. That is to say, they apply at a particular point in time to suggest which services most appropriately belong at which governmental level. However, there is also a longer-run issue that should be considered which affects the relative effectiveness and costs of municipal services. The external effects, interdependencies and technological and administrative inefficiencies illustrated above probably contribute over time to wide variations in qualitative levels of local services and disparities in tax burdens across jurisdictions. These variations enter into the location decisions of industry and residents which again over time affect the distribution of tax bases and service needs (concentrations of lower-income residents may require more publicly-supported income transfers and services). This contributes in the longer run to the deterioration of the financial position of most central cities and of some outlying working class communities. It also helps to perpetuate distributions of well-being and opportunities which are more unequal than society might prefer or at least be able to tolerate under arrangements where higher levels of government finance and/or administer certain functions.⁴

Two other general considerations relevant to the shift of services to higher levels of government should be identified. They are general in the sense that they do not distinguish among particular services. The first issue relates to local finance by property taxation, which as the first BUO study indicates is a

crucial matter in Massachusetts. It is suggested that any reduction of dependence on local property taxes is beneficial. The second consideration relates to the fact that the public sector is an institution which is only partly economic in nature and therefore some of the above four criteria must be applied in light of this assumption. It implies that if service financing is to be moved from the local level, the state is a logical prospect for assuming the services. The question of which services will be shifted in accordance with these suggestions is largely determined by application of the principles discussed in the section on specific economic criteria.

Property Tax Reduction: Major Rationale for Service Shifting

An important justification for shifting many municipal functions from cities and towns to the state is based on the fact that the major revenue source available to municipalities in the Commonwealth is the local property tax. Preceding arguments in this chapter have focused on what the characteristics of the areas served and the areas taxed should be; the following discussion concentrates on the problems inherent in using the property tax as the local source of financing, even when the areas exhibit the desired "fiscal equivalence." Although these services might be supported by other local revenue sources, historical precedent and state limitations on local taxing powers force the near-identity, in practice, of local financing with local property taxation. Reasons of both equity and efficiency dictate the undesirability of further (and, some would argue, current levels of) dependence on the local property tax.

There are two types of economic inefficiency generated by

heavy local dependence on the property tax. First, because the property tax falls on structures and improvements as well as on land itself, it acts as an excise tax on housing consumption and thus raises the price of housing relative to other (untaxed) goods. This tends to discourage investment in residential (and commercial) structures, both new construction and upgrading, to raise the quality of existing buildings. Secondly, because municipal jurisdictions within a metropolitan area are relatively small geographically and are likely to have widely varying effective property tax rates, if a firm or household decides to locate within the metropolitan area, its choice among the jurisdictions may be distorted by consideration of property tax differentials. This is currently of particular concern to central city areas which bear the further loss of business activity because of their generally higher full-value property tax rates.

There have been, historically, two basic approaches to the concept of taxation equity: taxation according to benefits received, and taxation according to ability to pay. As the more detailed discussion for particular services later in this chapter will indicate, a person's ownership of or use of property does not reflect the receipt of services financed through the property tax, even within a jurisdiction. Among jurisdictions, the location of need for services financed through the property tax may not coincide with the location of the property tax base.

If one adopts the "ability to pay" criterion, the property tax must be criticized for its regressivity on several levels:⁵ First, within a jurisdiction, because housing is a necessity, and

hence demand for it is income inelastic, taxes proportional to housing consumption will fall more heavily on low income families. This phenomenon is documented for the City of Boston in the next chapter. Second, in some jurisdictions, assessment practices result in properties occupied by low income residents being taxed at effectively higher rates than high income properties. In the City of Boston, infrequent reassessment results in effective tax rates being considerably heavier on properties the market values of which are rising more slowly than the city average: properties with market values which rise rapidly and which have unchanged assessments face falling true value tax rates.⁶ Third, because of the deductibility of local property taxes from the federal personal income tax, two additional aspects of regressivity emerge. Because the federal tax has a progressive rate structure, tax savings from a given property tax deduction are greater the higher the income bracket of the taxpayer. Also, only the statutory taxpayer may claim a deduction. Thus, owners of property recoup the entire deduction, while tenants pay part of the tax in their rent, but are allowed no tax credit. Finally, the local property tax is regressive across jurisdictions since individual jurisdictions are more income-homogeneous than the state as a whole. This local homogeneity with respect to income means that poorer jurisdictions must tax themselves at a higher rate to obtain a given level of local service.

State Government in Massachusetts: Appropriate Jurisdiction for Financing/Administration of Certain Municipal Services

Economists tend to make recommendations about where public

intervention should take place on the basis of knowledge about where the market systems fails, not on the basis of system characteristics of the public sector; yet the public sector and its actors should be evaluated as an institution in the same way as the private sector. Such evaluation starts from the premise that perfect efficiency of delivery cannot be expected. The existing pattern of institutions or organizations serves as a constraint on the nature of future decision-making; thus once the public sector has reached a reasonable point of maturity, it may be possible for it to take on additional functions which it would not have been profitable to undertake initially. Organization itself represents a productive and unique kind of resource. There are certainly scale economies intrinsic in the institution of government; hence, if there are many levels of government, each with administrative and enforcement machinery, they probably have excess capacity. This is one reason for choosing to shift a select group of functions from the municipal to the state level -- the state government already has the apparatus to administer other functions -- rather than setting up a new jurisdiction specifically appropriate to the function being shifted. An obvious example of the existence of ready administrative machinery is the air pollution case: the state already has facilities and personnel to monitor air pollution which is duplicated by Boston's agency. To promote more rational decision-making, it is also desirable to give consumers the opportunity to examine the trade-offs as between expenditures for various functions before settling on the allocation of each function, since the quantity and quality of

each service desired may depend on service levels for other activities. If the decisions as to quantity and quality of offerings of different services are made by different (even if overlapping) groups of constituents, such trade-offs are considered explicitly. A prime example of this problem is the present allocation of transportation responsibility in Massachusetts: because of the segmentation of authority, residents cannot make an explicit choice among alternatives (public transit, road improvement) if they desire to enrich the transport net between two areas.

The remainder of this chapter consists of separate discussions of the rationale for, and costs involved in, shifting administrative and/or financial responsibility for each specific service from local to state government.

A. PUBLIC SAFETY

Police Services - Overview

Police protection and law enforcement services in Massachusetts, which have traditionally been the primary responsibility of municipal government, have expanded considerably in scope and variety, particularly since 1960. Changes in patterns of urbanization throughout the state have not only generated dramatic increases in reported and unreported serious crimes against persons and property and prompted growing public fears and concerns, but have also produced unprecedented extensions in the volume of non-criminal activities of local police departments -- for order maintenance, traffic control and miscellaneous services -- which account for the bulk of police

work loads and expenditure requirements. The results have been steady increases in the uniformed strength of local police departments, a reduction in the number of municipalities without full-time police departments and the assignment of high priority to the local police function.

Municipal police expenditures in the Boston metropolitan area, for example, have reached significant levels--particularly in the region's central city and its nearest 12 neighbors, the larger communities, and the resort towns -- and the trends indicate an acceleration of police costs into the future. Police expenditures of the 78 cities and towns in the Boston SMSA increased from \$37.4 million to \$65.7 million, or by 76 percent during the eight-year period between 1960 and 1968. By 1975, they are expected to reach \$141.3 million, a rise of 115 percent during the seven-year period from 1968 through 1975. Police expenditures for the central city, which increased by 50 percent between 1960 and 1968, are expected to rise by 129 percent during the 1968-75 period. (By 1972, they had reached \$75 per capita and will approach \$100 per capita by 1975.) Police costs for the remaining 77 cities and towns, which increased by 99 percent between 1960 and 1968, will probably rise by 105 percent during the 1968-75 period. Hardest hit of this latter group in 1975 will be municipalities experiencing sharp upward trends in police costs since 1968, some of which are now in excess of \$40 per capita: such close-in municipalities to Boston as Cambridge, Chelsea, Dedham, Everett, Needham, Newton, Quincy, Revere and Watertown; other larger municipalities in the area with similar recent trends

(e.g. Framingham , Lynn, Medford, Watertown); and so-called resort communities (Hull, Marblehead, Swampscott) with seasonal peaks of workload for police departments which explain large disparities in police expenditure levels.

Cities and towns in Massachusetts are almost entirely dependent upon local revenue sources, mainly the property tax, to finance their police departments. Neither state reimbursements nor federal aid are significant sources of financial assistance to the police function. Moreover, although a major aspect of the expansion in the police workload is attributable to the automobile, the State Highway Fund is not used to finance traffic control activities of local police departments although the Highway Fund is used to cover 85 percent of the expenditures of the State Police and 60 percent of the expenditures of the MDC parks district, including the MDC Police.

Disparities in police costs among municipalities of the state are largely explained by physical, economic and social factors which generate demands for above average police services: high population densities, relatively high number of jobs relative to resident population, concentrations of poor populations, relatively large daytime populations, relatively large volumes of traffic and concentrations of high-value property. The central city of the Boston SMSA not only has all of these characteristics, but unlike its municipal neighbors, is completely self-sufficient in supportive police services (crime laboratory, training, general and special investigation, harbor patrol) which are provided mainly to other local police departments by the State and MDC Police. Police

services to non-residents of the central city of the Boston SMSA account for at least 20 percent of its current police costs, about \$12 million of the estimated \$55 million for 1972. The bulk of this covers non-criminal activities of the Boston Police Department: order maintenance, traffic control, and emergency ambulance services.

Despite the continuing tradition of strong local control over law enforcement in Massachusetts, which follows the national pattern, there is growing awareness of the areawide nature of modern crime. This has prompted greater sharing of responsibilities among levels of government for all aspects of criminal justice, but particularly in police services. Thus, annual expenditures for the State Police in Massachusetts almost tripled during the 1960-72 period, reaching \$12.5 million, reflecting expansion of services in highway patrol, criminal investigation and back-up technical services to local police departments and other law enforcement agencies. Uniformed strength of the State Police is now over 900.

Moreover, the Metropolitan District Commission (MDC) Police, once limited to safeguarding MDC property and protecting and regulating people using MDC facilities, has similarly emerged as a major arm of highway law enforcement in the Boston metropolitan area and has been gradually expanding the scope and variety of special assistance in law enforcement to cities and towns of the metropolitan parks district. Its uniformed strength exceeds 600.

Although the federal role in law enforcement has been limited mainly to services of the Federal Bureau of Investigation, enact-

ment of the Omnibus Crime Control Act of 1968 expanded the catalytic change-agent function of the federal government, gave special encouragement to developing state and local planning capability in all areas of criminal justice and supported efforts to improve the effectiveness of police services and other aspects of the criminal justice system.

Despite the fact that law enforcement is gradually assuming more and more intergovernmental characteristics, responding to the spread of crime and other law enforcement factors across jurisdictional lines, and that informal and formal regional cooperation arrangements in police services is expanding (particularly in communications, crime information and other technical areas),⁷ a cursory analysis of the state-local system of police services suggests that it is far from adequate when measured against structural, administrative, fiscal and geographical criteria. However, if the desirability of maintaining easy access of people to their local police forces and of giving adequate consideration to the importance of community values in local law enforcement are given proper consideration, these factors tend to outweigh structural criteria.

Nevertheless, the debate continues as to whether local governments in most metropolitan areas provide efficient structures for delivering police services. On one side are those who doubt that communities of less than 50,000 population can provide adequate police protection. Are police resources wasted by the highly-fragmented local organizational system through which they are provided? On the other side are those who conclude that police

service is mainly a local service, with only minor spillovers of benefits. Somewhere in between the polar positions of this debate is the argument that certain aspects of police services, mainly the supportive technically-oriented services, would be improved by area-wide reorganization while leaving basic police services to local government.

A recent study on the economies of scale in the police function concludes that a fragmented police system increases the total level of police manpower in the metropolitan area but not overall police costs. According to this study, "too large and too small police systems combine to retard the overall efficiency of metropolitan police protection. Some restructuring of this system then is in order to provide high-quality basic and supportive police services to all residents of metropolitan areas."⁸

If the most valid current evidence does not support full-scale regional consolidation of local police forces, the focus of this section of the report is on major opportunities for shifting the responsibilities and/or financing for selective categories of police services from municipal to state government: (1) services being financed from local property taxes which are primarily benefitting the motor vehicle owner/user; (2) activities which are so specialized in nature as to be amenable to substantial economies of scale; and (3) services which clearly provide benefits to large numbers of persons and groups not resident in the service-providing municipality. In some cases, particular services have more than one of the above characteristics.

Police Traffic Regulation

As the motor vehicle's domination of American life continues largely unabated, municipal police departments have been forced to adjust their traffic regulation activities to this reality. For example, the number of registered motor vehicles in Massachusetts more than doubled during the 1950-70 period and the total now exceeds 2.7 million. Greater local traffic, some of it exacerbated by regional traffic demands, has been one of the major factors in the overall increase in the number of police officers and in the emergence of specialized traffic units in larger police departments for handling accident investigation, the recording and analysis of accident data, centralized traffic enforcement patrols, the regulation and enforcement of off-street and on-street parking, the supervision of traffic movement and the control of traffic intersections. In most police departments, particularly the smaller ones, patrol activities are blurred with traffic control activities, thereby making difficult the identification of traffic regulation costs.

Nevertheless, a conservative estimate is that from 5-10 percent of the expenditures of a local police department goes toward traffic regulation and enforcement, the proportion increasing for smaller departments. The Boston Police Department, for example, expended \$2.5 million in 1970 for a separate Traffic Division which had a complement of about 180 police officers. For the entire state, it is estimated that expenditures for traffic regulation by municipal police departments in 1970 totalled \$7.3 million.

There are several justifications which may be used to support the position that the cost of police traffic regulation and enforce-

ment should be shifted away from property taxes.

(1) This police activity primarily benefits the owners and operators of motor vehicles. Highway user taxes and fees go into a separate State Highway Fund, the proceeds of which are used for state highway planning, design, reconstruction and maintenance, including the cost of traffic regulation and enforcement thereon, but with limited distributions to cities and towns for local highway purposes. Moreover, the legal provisions for state assistance to local highways do not include the cost of traffic regulation and enforcement, and motor vehicle excise taxes collected by cities and towns are not large enough to cover expenditures incurred for all highway-related purposes, including police traffic control activities. Thus, if the motor vehicle owner is to be responsible for all costs which he generates, expenses incurred by local police departments for traffic enforcement and regulation should be financed from the State Highway Fund. It is under this rationale that 85 percent of the budget of the State Police and 60 percent of the budget of the MDC Police is charged to the Highway Fund.

(2) Financing of police traffic regulation from the State Highway Fund will help to offset some of the disparities in police expenditures among municipal police departments attributable to the spillover of benefits to non-residents. For example, although Boston's resident population is only 23 percent of the total population of the Boston SMSA, over 900,000 persons enter the downtown area of the central city on an average weekday,⁹ of whom some 72 percent come in by automobile. Almost half of this daily in-migration consists of suburbanites (some 300,000)

who fill about 60 percent of all jobs in the central city. Although the impact of interstate and regional traffic is particularly severe on all central cities of metropolitan area, particularly those in the larger areas, one of the results of the outward movement of major employers is that more and more municipalities are being adversely affected by the spillover effects of police traffic regulation. "...as the metropolitan area becomes more and more specialized and there is greater separation between jurisdictions of residence, work, or entertainment, the central-city exploitation effect ... becomes extended to more and more localities."¹⁰ To the extent that a growing number of cities and towns are carrying varying shares of cost spill-ins caused by increased traffic, they are providing service benefits to non-residents, the cost of which should be counteracted through the financing arrangements for police traffic enforcement and regulation.

Specialized Police Services

Several categories of municipal police services in Massachusetts either have sizeable benefits which spill over to the residents of communities beyond those of the financing jurisdiction and/or lend themselves to a shift from municipal to area-wide responsibility for administration to achieve lower unit costs.

1. Harbor Patrol

For example, municipalities located on the Atlantic coast generally extend their police patrol services to harbors within their jurisdictions through a harbor master. With few exceptions this is a summer seasonal activity, geared to the needs of boating enthusiasts, the costs of which may be recouped from docking fees. How-

ever, it does not represent a major service activity. In the city of Boston, however, since 1854, when the harbor police was incorporated into the newly-organized Boston Police Department, and until 1973, when the harbor police was terminated, the City operated full-fledged patrol services in Boston Harbor, including those of the harbor master. By 1878 the Harbor Police had become a separate police division and during the past two decades, a variety of emerging duties had been added to the division's patrol responsibilities. In 1970, Division 8, encompassing the Harbor Police and Emergency Service Unit, consisted of 60 men, three boats and three vehicles and an operating budget of \$783,000.

The jurisdiction of the Boston Harbor Police has long been territorially complicated. Of the 58.7 square miles of water under its control, eight square miles belonged to the municipalities of Hingham, Hull, Quincy, Weymouth, Winthrop. In the latter areas, the Boston Harbor Police had only harbor master powers; in the remaining 50.7 square miles of water, it possessed full police powers in addition to harbor master authority.

As for its range of responsibilities outside of harbor master work and enforcement of the state's criminal laws, the marine activities of the Boston Harbor Police could be divided into two categories: (1) those tasks shared with other agencies; and (2) tasks which are the primary responsibility of other agencies, but which the Harbor Police supplements.

A good example of a shared task performed by the Boston Harbor Police is the rescue work carried out jointly with the U. S. Coast Guard, the Boston Fire Department and other units of the Police

Department. An illustration of work supplementing the primary activities of another agency is the removal of obstructions in the harbor, handled mainly by the U. S. Corps of Army Engineers.

The Boston Harbor Patrol also responded to a wide range of emergency calls in the city through a subordinate emergency service unit: to major accidents, fires of three or more alarms, suicide attempts, bomb reports, riots, etc. The emergency service unit consisted largely of (1) day maintenance details (averaging eight police officers) to handle routine erection of wooden barriers and other maintenance chores related to public safety, and (2) the back-up boat crews for the two late watches, to which a four-officer nucleus was assigned.

The focus of patrol provided by the Boston Harbor Police, except for several relatively unimportant islands, was the water. Docks, shoreline and similar policing responsibilities belong to the law enforcement units of the MDC, the Massachusetts Port Authority, the U. S. Army and the U. S. Navy. Moreover, the policing of harbor waters was not the exclusive mission of the Boston Harbor Police. The U. S. Coast Guard performs similar duties although with respect to federal rather than state law.

In developing the City of Boston budget for 1973, the Mayor came to the conclusion that the City's fiscal situation no longer justified police protection in Boston Harbor, a service benefitting the entire region. Although he did not include an economy of scale argument since his decision was service termination rather than service transfer to an areawide jurisdiction, the Mayor might also have pointed to the fact that the harbor patrol was a specialized

service requiring expensive capital equipment and specialized personnel, the costs of which might have been reduced through administration under a higher level of government. As a result of the Mayor's budget decision, the Police Department's harbor patrol ceased operations and its emergency service unit was transferred to other police divisions. The Mayor's decision prompted MDC officials to begin serious consideration for taking over the harbor patrol function abandoned by the City of Boston. MDC operation of the harbor patrol would be a logical extension of that regional agency's law enforcement activities, particularly since the MDC is already responsible for major coastal areas of the harbor. This report adopts the assumption that the MDC will restore the level of harbor operation to what it was when under control of the Boston Police Department. If the City's total cost of the harbor patrol in 1970 was about \$245,000, the City would gain a net reduction of \$213,000 from MDC resumption of the service. This estimate of net gain incorporates the fact that the 37 cities and towns in the metropolitan parks district would assume 39 percent of harbor patrol expenses, the remainder being charged to the State Highway Fund -- 60 percent -- and to the State General Fund -- one percent. The City of Boston would assume 32.95 percent of that proportion of the total cost assessed against member cities and towns.

2. Crime Laboratories

Crime laboratory services, like harbor patrol services, are another important area of public safety operations that should be analyzed from the point of view of potential economies from consolidation. Crime laboratories require large amounts of

specialized equipment and facilities, as well as skilled technicians and support personnel. One of the major conclusions drawn from an evaluation of existing crime laboratories is their relative under-utilization; that is, actual operations seldom reflect the potential back-up support which crime laboratories could provide to the solution of crimes. It is estimated that on a national basis crime laboratories are involved in less than two percent of the investigations of all reported crimes. With such a high degree of fixed costs, successful efforts to increase utilization will result in substantial cost savings.

The actual demand level experienced by crime laboratories is primarily generated by: (1) the amount of crime reported to the police; (2) the amount of physical evidence collected by the police as part of crime investigation; and (3) the amount of the collected evidence that is transmitted to the crime laboratory under conditions that make its examination possible under legal and scientific criteria. Many factors influence the above three determinants of crime laboratory demand. Two important and readily observable factors affecting demand are: (1) the density of uniformed police officers; and (2) the distance of the laboratory from the respective police jurisdictions it is supposed to serve.¹¹

There are only two fully-equipped crime laboratories in Massachusetts: one operated by the State Police and the other by the Boston Police Department. In addition, state law enforcement agencies operate two partially-equipped crime laboratories. The two complete laboratories are located in the City of Boston.

Boston is the acknowledged focal point of crime in Massachusetts.

With only 11 percent of the state's population, it is the site of over one-fourth of the state's index crimes and its police department accounts for almost one-fourth of the total number of uniformed police officers in the state.

According to the most recent independent evaluation of crime laboratories in Massachusetts, the potential or latent demand for such services in Boston is estimated at some 4,000 cases per year. However, this is almost 10 times the total number of cases in which the crime laboratory of the Boston Police Department was even superficially involved.¹² It is likely that the State Police crime laboratory, which serves all municipal police departments other than Boston's, displays similar characteristics of actual utilization, particularly since the density of uniform police officers and distance are even more critical factors determining the rate of crime laboratory investigation outside the central city.

The fact that the state has only one fully equipped crime laboratory, and that it is located in Boston, suggests that the state has attempted to concentrate its laboratory services. It is argued here that the state laboratory and the Boston laboratory, as well as the two more limited crime laboratories under the administration of the Department of Public Safety, should be consolidated into a regional laboratory financed by state funds. The primary justification for this consolidation would be to permit a greater centralization and utilization of technical skills and specialized equipment. There are additional advantages of this proposal. At the federal level, an emphasis in the criminal justice area is toward increased use of scientific and technical facilities

on a regional basis. Funds to help implement these developments are coming "from the LEAA".¹³ A consolidated regional crime laboratory would be consistent with the federal thrust, and would allow for the implementation of an overall plan for laboratory services, the emphasis of which is on upgrading the two major facilities in Massachusetts by strengthening their staff and equipment.

Although consolidation will increase utilization and reduce costs, a crime laboratory does not necessarily become more effective through increased size, and the quality of service can be impaired by over-centralization of services and by over-specialization of technical staff. To reap the benefits of crime laboratory consolidation without sacrificing quality of service, a method of joint state-city supervision of the centralized laboratories should be worked out so that Boston's particular crime laboratory requirements, a major component of the workload in a centralized criminalistic operation, would be given adequate attention.

3. Police Training

Finally, there is a growing trend toward the centralization of police training activities, particularly as the state increases its concern for the quality of local police work and assumes greater leadership in developing strategies to upgrade the skills of police officers. "Central training facilities, for both initial orientation and training, tend to eliminate wasteful duplication, provide more adequate programs, and introduce higher quality of instruction."¹⁴

As the role of the police officer grows in complexity and sensitivity, the importance of adequate training increases commensurately. As noted by one specialist:

There is a trend today for courts to hold municipalities legally responsible for the torts of police officers...In many cases the employing municipalities have been held liable for substantial money judgments as damages to injured plaintiffs. The quality of a policeman's training is no longer simply a social or political question; it is also a matter with important legal and financial consequences.¹⁵

In a recent court decision (Circuit Court of Appeals, Carter v. Carlson), the court carried the above concept further by concluding that superior police officers were responsible for the supervision, control and training of their subordinates. If a police officer performed a negligent act causing civil injuries, the superior officer would be a party defendant in civil proceedings under a claim of negligence in carrying out responsibilities for supervision, control and training.

Responsibility for police training in Massachusetts is highly fragmented, fragmentation coinciding with the highly decentralized system of police services. However, the state makes an effort to coordinate and integrate police training efforts through the Massachusetts Police Training Council (MPTC), a mechanism established in 1964 to sanction municipal police training schools and to make rules and regulations governing the operation of such schools -- courses of study, attendance requirements, equipment and facilities, and qualifications of instructors. According to the statute creating the Police Training Council, every municipality over 5,000 in population which appoints a regular police officer

on a full-time, permanent basis must insure that such person attend a police training school within nine months.¹⁶ Effective July 1, 1972, ten weeks of training (an increase from the original standard of four weeks) was required for police recruits. The Council also prescribes that each member of a local police force receive one week of in-service training annually.

The Massachusetts Police Training Council has accredited 18 police training academies within the state. Nine of the approved training facilities, including the Boston Police Academy, are located within the Boston SMSA. Of these nine, six are operated by municipal police departments, the others by the State Police, the MDC Police, and the State Registry of Motor Vehicles. The nine police academies in the Boston SMSA incurred operating expenditures in 1970 estimated at \$655,000. The Boston Police Academy operated at a cost of \$286,000; the State Police Academy had total expenditures estimated at \$181,000. All of the municipal police academies in the Boston SMSA excluding the central city spent \$30,000 or less for police training. The nine police training academies outside the Boston SMSA incurred operating expenditures totalling \$168,000 in 1970. The Massachusetts Police Training Council itself operated at a cost of \$54,000 in 1970.

An independent evaluation of the impact and relative effectiveness of the Massachusetts Police Training Council came to the following conclusions:

1. Training standards established by the MPTC are not being adhered to, resulting in uneven recruit and in-service police training throughout the state.

2. Training requirements of the MPTC are not universally applied throughout the state, resulting in local police forces receiving no formal training whatsoever.

3. Training requirements mandated by the MPTC impose fiscal burdens on municipalities which must comply.

4. Under the present system of 18 separate MPTC-approved training facilities, potential economies of scale are not being realized.¹⁷

With the encouragement and financial assistance of the Governor's Committee on Law Enforcement and Administration of Criminal Justice, recent efforts are underway to strengthen police recruit and in-service training programs including the establishment of a statewide network of training facilities to absorb scattered training activities now being financed with LEAA funds.

A major step that should be taken to achieve high statewide standards in police training is to transfer all responsibility for this activity to the State Department of Public Safety and to shift the financing of police training from cities and towns to the state. Not only would substantial economies of scale result from centralization of police training services, but the state would be assured greater uniformity in the scope and quality of such training.

Although higher quality police training under a centralized statewide system will mean higher costs, the assumption of this report is that they will be offset by savings generated by consolidation of training facilities and services.

Fire Services

The strong local tradition found in police services is also apparent in fire protection and prevention activities. Similarly, the costs and benefits of basic fire services do not significantly "spill over" to the residents of other localities. Moreover, fire department resources are deployed so as to be close to potential fire grounds, thereby reducing the possibilities of "economies of scale." And local fire departments have entered into mutual aid arrangements designed to pool manpower and equipment required for fires and emergencies beyond their normal capacities.

However, there are two major categories of fire protection -- arson investigation and fire boats -- in which historical and other factors explain services provided by the central city which duplicate those provided through state agencies. To put the analysis of these specialized service areas into perspective, it should be pointed out that Boston's 3,500 fires and explosions account for over 15 percent of all fires and explosions in the state and its fire losses amount to almost 25 percent of fire losses incurred in the state.¹⁸

1. Arson Investigation

Boston is the only municipality in the Commonwealth which carries out the investigation of fires of suspicious origin with its own arson inspection squad. A component of the Fire Prevention Division of the Boston Fire Department, the arson inspection squad is charged with the responsibility for investigating the causes and circumstances of every fire and explosion within the city limits, despite the fact that a 1945 amendment of the applicable general law gave the State Fire Marshall the authority to investigate all fires

of suspicious origin throughout the state, thereby eliminating previous provisions of law which excluded the State Fire Marshall from investigating fires in the City of Boston.¹⁹

Under existing procedures, therefore, the arson squad of the Boston Fire Department carries on its investigations in order to assist the department in removing the causes of fires and explosions, in apprehending persons responsible for fires, and in turning over all the facts and evidence uncovered in such investigations to the office of the State Fire Marshall.

If the State Fire Marshall is to comply fully with the statute delineating his responsibilities within the city of Boston in addition to all other parts of the state, the staff and resources of the city's arson squad must be transferred to the State Department of Public Safety to supplement existing state fire inspectors and supportive staff. The expenditures of the Boston arson squad were estimated to be \$146,000 in 1970.

2. Fireboat Service

The City of Boston has been providing fireboat service to waterfront property in Boston Harbor since 1873. In addition to responding to alarms in Boston's pier area, the Fire Department has extended its fireboat service to the adjoining municipalities of Revere, Everett, Quincy, and other surrounding communities that have waterfronts but do not maintain fireboats. The City does not receive payments from any municipality that benefits from Boston's fireboat service.

In addition to the several municipalities that have an interest and investment in the harbor, the Massachusetts Port Authority

(Massport), which is responsible for the general development of the port of Boston, owns considerable property on the waterfront.

In 1970, the Boston Fire Department operated two fireboats, 30-year old converted minesweepers with wooden hulls. Approximately 94 feet long, the boats travel at about 10 1/2 knots. Their large size and slow speed hinder their effectiveness in fighting fires on pleasure craft and in commercial harbor marinas. One of them, considered mechanically unreliable and used as a back-up craft in 1970, has since been replaced by a new vessel. The City's cost of fireboat services in 1970 was estimated at \$476,000.

The fireboats are berthed in the upper harbor, the area of greatest potential fire hazard in the harbor because of the presence of fuel farms. The majority of their runs, however, are to the lower harbor, the area of greatest investment and business activity on the waterfront.

Existing legislation authorizes the City and the Port Authority to enter into a mutually satisfactory agreement for fire service, and for some time both parties tried to reach such an agreement.

On its part, the City wanted the Port Authority to buy a new fireboat for the Boston Fire Department. It argued that Massport owned a large amount of tax-exempt waterfront property, maintained potentially hazardous facilities in the harbor area and shared a responsibility with the City to protect shipping in the harbor.

Massport rejected the City's proposal, concluding that the City's demands were excessive and that it could operate its own fireboat at lower cost by using a different crew configuration and by not having to pay supplementary wages to men because of

their special marine licenses. Massport has stated that its fireboat will be available to all waterfront property in the harbor, regardless of ownership.

The continuing controversy over responsibility and control for fireboat services in Boston harbor is a self-serving bureaucratic feud. The logical solution would be to negotiate a satisfactory agreement as authorized by law under which Boston's two fireboats would be transferred along with their crews to the Massachusetts Port Authority in exchange for the completion and assumption by Massport of fire boat services to Boston Harbor. Although the three large craft to be operated by Massport through this proposed transfer would not represent an ideal fire boat fleet -- it has been suggested that Boston's harbor can be adequately served by two larger fireboats (one for regular duty and one for reserve) and a small draft vessel to handle marine fires) -- the consolidation would represent a good first step toward achieving effective fireboat service at less cost.²⁰

B. TRANSPORTATION

General Rationale for State Assumption of Transportation Financing

There are several general reasons which may be offered to justify state financing of all transportation services. Moreover, arguments based on the characteristics of specific transportation modes may also be used as further substantiation for the proposed shift from municipal to state financing. Transportation is necessary for the effective functioning of the state's economy. No single transport mode serves all residents of the state; nor does any one transport decision resound to the direct

benefit of a majority of the people. Transportation, by its nature, consists of a network of interconnected services and modes. A proper balance within this network would provide maximum service to most residents of the state. Thus the present system of earmarking highway funds required by the Massachusetts Constitution is inefficient in an economic sense, as is any earmarking of revenues, because it prevents rational consideration of trade-offs in the allocation of funds for transportation purposes. Since balancing these trade-offs is necessary to bring about the desired network, any investment in transportation must be weighed against three criteria: its effects on substitution within the mode across routes, substitution across modes, and induced increased demand for transport services as a whole. Separately planned, administered, and financed arrangements for different links within each mode and across the modes cannot carry out a consistent set of transportation priorities even if they have been decided upon.

As pointed out by the current Massachusetts Secretary of Transportation in a discussion of the piecemeal growth of transportation functions at the state level, there is "virtually no capacity for overall transportation planning and coordination ... Little attention has been paid to welding the multiple units into a smoothly functioning team, in which the parts contribute to the objectives of the whole (as determined by the governor and the General Court) with maximal effectiveness and minimal waste motion."²¹ Thus, the new (1973) Massachusetts transportation assistance proposal submitted by the Governor recognizes the

existence of trade-offs between services, in offering municipal-ities outside the Massachusetts Bay Transportation Authority (MBTA) greater highway aid (\$30 million) as part of a package in which the state would assume a higher proportion (50 percent) of MBTA costs. Thus the recommendation in this report is that the state take over complete responsibility for highway, highway-related, and public transit expenditures and finance them from the Highway Fund and the more generally-based income tax and/or sales tax.

1. Public Transportation

The traditional argument for centralized control of transit is that of maximum returns to scale: the efficient size of area for supply of transit services is larger than any one jurisdiction. This is even more true when one considers that people use transit to travel from one local jurisdiction to another. Continuing benefit spillovers tends to cause under-financing by each locality involved and may also lead to an inefficient network across regions, since one community's decision to finance or not finance a given route affects the transportation available to other communities.

For the MBTA, central administration already exists, although most of the costs in excess of operating revenues are assessed upon member cities and towns of the metropolitan transit district. For the rest of the state, transit is a patchwork operation, largely carried out by the private sector. However, as more and more private carriers go out of business, cities and towns have found themselves unable to muster the financial and technical expertise to assure the continuation of adequate transit services to their residents, mainly because of the interdependence of the

interests of various jurisdictions with respect to a given route or carrier.

Given that some sort of centralized authority is needed to promote coordination, why should the costs of public transportation be absorbed by the higher governmental level? One lesson being learned from the MBTA experience is that administration and planning at the state level are incompatible with locally assessed costs, regardless of the "fairness" of the assessment formula. Decision-making cannot be separated from ultimate fiscal accountability without producing dire controversy. The present situation has been characterized in the following terms: "...a self-defeating tax structure for the support of transit in the Boston region, combined with total inattention to the problem of transit survival in the Commonwealth's other urban regions."²² Secondly, as discussed previously, local financing is likely to result in under-provision of services. The entire state certainly benefits from the existence of the MBTA, one of the key factors in the functioning of the Boston area economy, an economy which generates more than half of the Commonwealth's tax revenues. The whole state depends heavily on the economic well-being of the Boston area and on other urban areas as well, and thus subsidizes only itself by financing urban transportation. Only through centralized assumption of administration and costs can coordination of local operations and plans be achieved while overcoming inter-local fiscal disparities.

2. Highways

Many jurisdictions, each with responsibility for rights-of-way through their own territory, are not likely to set up a transportation system so that people can move efficiently from one jurisdiction, through several others, to a second jurisdiction. What is desired is that resources for the construction and maintenance of highways be allocated in accord with the overall pattern of origins and destinations. This can only happen over a set of local jurisdictions by one higher authority imposing its priorities and standards upon several lower-level jurisdictions. The results of the present Massachusetts system of highway administration -- "an uncontrolled division of responsibilities without planned objectives"²³ demonstrate the validity of this thesis. The 1968 report on the Massachusetts highway "non" system documents cases of many towns which have responsibility for statewide arterials within their borders on which significantly lower improvement and service levels are maintained than on adjacent state-run highways. In addition to the urgent need for central coordination, there are the usual spillover, spill-in arguments which may be used in support of central financing. In almost all cities and towns, especially in the larger centers of economic activity, highways and highway-related activities (e.g., snow removal, street lighting) benefit out-of-town residents who work or shop in such centers as well as local residents. Spill-ins, of course, weigh on the other side of the fiscal equation to the degree that out-of-town workers and shoppers add to the local economy and its tax base. Although not every motor vehicle owner

benefits from each local access road, each probably benefits from some local roads.

Another basic argument for state assumption of all highway expenditures is the simple dictum of letting the user pay. The state maintains a separate pool of funds collected from road-and vehicle-related sources. As William Vickrey has argued, and as the figures in the accompanying tables for Massachusetts bear out, although road-related expenditures on the average equal motor fuel taxes and license fees (in the case of Massachusetts, we take this to refer to the dedicated revenues in the Highway Fund plus the motor vehicle excise tax revenues collected locally), the motorist is not paying his way. What is true on average is not true of the users of congested urban streets. First, expenditures from city funds exceed road-related receipts. Second, much of the true cost of providing space for city streets and highways does not appear in the expenditure accounts because it takes the form of land and buildings withdrawn from the tax rolls. Thus local highway financing penalizes cities in two special ways: (1) on average, more non-residents "consume" urban road services; (2) it is in the cities that highway-related costs exceed road-related revenues. This second factor is the product of two phenomena: although the state aid system in Massachusetts has until very recently discriminated against larger cities (Chapter 81 aid), the new (1971) Chapter 497 aid is somewhat closing the gap. Moreover, temporarily at least, administrative interpretation of the Chapter 497 aid formula has effected distributions to the larger cities which have been in excess of original estimates. It should also

be noted that the history of highway development has left the cities with a lower total mileage of state highways (state highways comprise 9.3 percent of public road mileage in the state as a whole, but only 1.6 percent of public road mileage in the City of Boston). On the expenditure side, urbanization itself generates greater highway needs: where rural roads have shoulders, urban roads must be built with curbs, sidewalks, drainage, traffic control devices and lights. The Governor's 1973 highway aid package proposal suggests that these differences in transportation needs be recognized at least to the degree of liberalizing Chapter 90 (matching) highway aid so that it may be used for construction and reconstruction of highways, "including resurfacing and other work incidental to that such as shoulders, side road approaches, landscaping and tree planting, roadside drainage, structure including bridges, sidewalks, bicycle paths, traffic control and service facilities, street-lighting, intersection construction..."²⁴

Finally, there is an argument that non-users as well as users benefit from roads and therefore should share in some of the costs. For example, it can be demonstrated that property owners receive benefits from access to their land. This is true when a road is first built: there is a once and for all increase in the value of land which is made more accessible. For this reason, street betterments are charged to owners or a developer agrees to bear some of the cost of a new or improved road. When the land is subsequently sold, however, the increased value will have been capitalized into the purchase price of the land, and there is no argument for making subsequent owners continue to pay

for the "access" through the property tax.

The underlying assumption used in costing out the highway function is to recommend that those highway-related expenditures presently supported by the property tax (not by users) be shifted to the state with financing from the State Highway Fund, and to urge at the same time that the present arbitrary classification of roads as state, MDC, or municipal be corrected to reflect actual interest in usage. If full state financing were adopted, classification would determine the jurisdiction of administrative responsibility and thus an up-to-date classification of highways in the state would transfer the administration of almost 2,000 municipal highway miles to the state or MDC.

Impact of Shift of Financing on Transportation Service Levels

It is expected that the state assumption of all street and road financing would be carried out within the context of a program of functional reclassification of roadways as outlined in the 1968-69 "Statewide Highway Transportation Plan" prepared for the Massachusetts Department of Public Works. The cost figures in that report (annual for 25 years) are based on what it would cost (at 1968 prices) to modernize (construct, reconstruct, maintain, administer) all streets and roads in the Commonwealth to bring them to the service levels consistent with their traffic loads and priority listings in the statewide system. The figures in Table II -3 reflect such costs for roads in all classification levels which are presently administered by cities and towns. For example, one item in the total is the percentage of road-miles in the reclassified state secondary system presently administered by cities and towns multiplied by the modernization costs of the

entire secondary system. The cost figure thus obtained was then reduced by the amount of 1970 state highway aid and 1970 local motor vehicle excise tax liabilities to produce the net cost of state assumption of financing. It should be noted that this figure does not include all highway-related activities such as snow removal which were included in the 1970 transportation cost figure, and thus is understated to this degree. It should also be noted that such a plan involves additional expenditures by the state on roads they presently administer and maintain as well, and these costs are not reflected here.

Since the MBTA deficit is so grudgingly absorbed by most of the member cities and towns of the transit district the representatives of which feel it is an additional pressure on their already-overburdened property tax, the budget constraint on the MBTA is a binding one and probably does not reflect the level of service that might result from a true opportunity cost analysis of, for example, making use of the Highway Fund for transit purposes. However, given the constitutional limitation and politics of transit finance in the Commonwealth at present, it is not expected that a shift to state financing (through diversion of the Highway Fund) would loosen this constraint. It is probable that only the availability of federal funds for transit operating expenses, if enacted, would allow a more balanced service offering as between transit and highways.

The transit situation in the rest of the Commonwealth is less well-documented. However, it is reported that carrier operations are folding in many parts of the state. Subsidies to date have

mostly taken the form of generous (though to the low bidder) school bus contracts which provide the margin on which regular routes can be operated. As these school bus contracts are lost, bus companies expire. In a recent case, the Union Street Railway (USRW) requested subsidies from New Bedford (\$125,000), Fall River (\$75,000), and Brockton (\$112,000). Brockton has subsidized in the past and agreed to this request; Fall River had not made a decision as of October, 1972 and was considering such alternatives as a fare increase or awarding the school bus contract to the USRW even though it was not the low bidder; New Bedford has refused the subsidy request. The USRW claims it cannot continue operating any of its routes unless it receives all three subsidies. This example points up two facts: (1) the decisions made by individual municipalities are interdependent, and (2) the transit problem in Massachusetts is wider than just the MBTA.

The transit figure contained in Table II-3 includes: the MBTA total assessments on cities and towns raised in 1971 property taxes and attributable to 1970 MBTA operations; contributions by non-member municipalities; 1970 subsidies to other transit systems in the state; and 1970 operating losses on regular routes reported to the State Department of Public Utilities (DPU). There were 23 carrier operations which showed such losses in their 1970 reports to the DPU Accounting Office. The actual cost of providing operating subsidies to operations presently experiencing losses might be greater than the reported sum because the losses do not include any return to equity capital. It should also be noted that state assumption would expedite channeling of available federal transit funds to localities.

TABLE II - 1

ESTIMATED TRANSPORTATION EXPENDITURES FOR CITY OF BOSTON, 1970

A. Streets and Related Functions (Net of State Aid)		
1. Traffic and Parking Department (gross)	\$2,152,388 ¹	
2. Street maintenance (Public Works)*	7,209,388 ²	
3. Snow removal	1,327,799 ³	
4. Debt service (1970 principal and interest payments on loans for public ways, bridge construction, sidewalks, automatic traffic control signals, parking facilities)	5,321,625** ⁴	
Subtotal Gross Expenditures		\$16,011,200
5. Traffic and parking receipts	(1,011,548) ⁵	
6. Motor vehicle excise tax collections	(9,965,807) ⁶	
7. Off-street parking facilities, rents	(1,277,055) ⁷	
Subtotal Receipts		(12,254,410)
Net expenditures paid from road-unrelated Boston funds		3,756,790
B. Public Transit		
MBTA 1971 assessment		24,939,965
Net Transportation Expenditures From Local City of Boston Funds		\$28,696,755

* Including street lighting.

** Debt service figure is understated because it does not include principal and interest payments on those proportions of Urban Renewal bonds used for streets, sidewalks, and other road-related items.

1. Annual Report of the Boston Traffic and Parking Department for the Year Ending December 31, 1970 (Document 21-1971).

2. 1972 Program Budget, City of Boston, County of Suffolk, "Public Works - Transportation, 1970 Expenditure", p. 401.

3. Ibid., "Public Works - Snow Removal, 1970 Expenditure", p. 581.

4. Records at Boston City Auditor's Department.

5. 1972 Program Budget, op. cit., "Traffic and Parking, 1970 Actual Income", p. 378.

6. City of Boston, County of Suffolk, Auditing Department, Annual Report for Fiscal Year Ending December 31, 1970, Schedule B-1, "Summary of Receipts", sum of current and prior years' levies of motor vehicle excise tax, p. 34.

7. Ibid., Schedule B-1, p. 37.

ESTIMATED TRANSPORTATION EXPENDITURES FOR ALL MUNICIPALITIES, 1970

A. Direct Highway Expenditures (Net of State Aid)		
1. 129 rural towns	\$ 9,925,214	
2. 183 urban towns and 39 cities (including Boston)	108,575,577	
Subtotal Highway Expenditures including Boston		\$118,500,791
B. Highway-Related Functions ¹		
1. Parking		
Rural	19,649	
Urban	6,620,329	
2. Street Cleaning		
Rural	9,148	
Urban	3,137,078	
3. Street Lighting		
Rural	520,442	
Urban	15,103,845	
4. Sidewalks		
Rural	50,941	
Urban	3,877,780	
5. Storm Sewers and Drainage		
Rural	299,413	
Urban	5,530,371	
Subtotal Highway-Related Expenditures Including Boston		(35,168,996)
Less Boston's Expenditures for Highways and Highway-Related Functions		(13,722,597)
Less Motor Vehicle Excise Tax Collections by All Municipalities Excluding Boston		<u>127,851,110*</u>
Net Cost of Highways and Highway-Related Functions to Cities and Towns Excluding Boston		12,096,080
C. Public Transit		
1. Brockton - to Union St. Railway	114,022 ²	
2. New Bedford - to Union St. Railway	79,851 ³	
3. Springfield - to Springfield St. Railway	80,000 ³	
4. MBTA Assessments on Cities and Towns excluding Boston	704,705	
5. MBTA Reimbursements from Outside Communities	181,232 ⁴	
Total Non-Boston Public Transit Expenditures		27,195,609
Net Transportation Expenditures From Municipal Funds		\$39,291,689

* Actual collections estimated at 90 percent of levies.

1. These figures all taken from reports available at the Fiscal Division of the Bureau of Transportation Planning and Development of the Massachusetts Department of Public Works. Because of the way these are reported, it was impossible to obtain the same functional breakdown of expenditures for Boston. For this reason, Boston is included in the subtotals, and then subtracted from the highway and highway-related total.

2. Contract for intra-city service, reported to DPU Accounting Office.

3. School fare subsidies, reported to DPU Accounting Office.

4. 1970 Annual Report, MBTA, p. 2

TABLE II - 3

ESTIMATED TRANSPORTATION EXPENDITURES BASED ON
ASSUMED CHANGES IN SERVICE LEVELS

A. Highways and Highway-Related Functions	
1. Costs of stopgap maintenance and identified construction needs as estimated by DPW study	\$239,890,000 ¹
2. Motor Vehicle Excise Tax Collections, 1970	(137,820,000) ²
3. 1970 State Aid for Local Highways	(25,850,000) ³
Net Cost to State of assumption of highway and highway-related costs if motor vehicle excise tax is turned over to state	
	\$76,220,000
B. Public Transit	
1. MBTA - 1970 total assessments	51,644,670 ⁴
2. Deficits of other public carriers in the state	462,087 ⁵
3. Present subsidies to carriers outside MBTA	273,873 ⁶
Net cost of transit financing take-over by State	
	52,380,630
Total Estimated Cost To State Of Assuming Financing Of Transportation With Attendant Changes In Service Levels (See Text)	
	128,601,000

1. See text.

2. Actual Boston collections 1970 plus estimated collections by other cities and towns (estimated collections: 90% of levies).

3. Chapters 81/90 G.L., C. 679, Acts of 1965, C. 619, Acts of 1967, C. 768, Acts of 1969. Totals from Fiscal Division of Bureau of Transportation Planning and Development, Mass. Department of Public Works. State aid authorized under Chapter 497, in 1971, would add \$21 million to this figure.

4. 1970 Annual Report MBTA, p. 1.

5. "Losses on regular routes" reported to DPU Accounting Office.

6. From Table II - 2, items C1-3.

C. DISPOSAL OF WASTES

Why State Financing

The collection of solid and liquid wastes from the point of their production (mostly households and business) clearly benefits the property-owners (or renters) to whom the service is rendered and their neighbors. Minimum amounts of uncollected wastes will inflict their unpleasant effects only upon a fairly small area. Improper disposal of the growing volume of collected wastes, on the other hand, can impose negative externalities on a much wider region. Down-wind or down-stream cities and towns can suffer considerably from the disposal choices made by other cities and towns. State financing of such disposal activities, however, would facilitate the imposition of certain minimum standards to eliminate these negative spillover effects.

State Financing and Minimum Standards

Such minimum standards can also be imposed simply by fiat, but as the recent Raytheon report on solid waste disposal points out, this action can impose undue financial hardship on individual jurisdictions when no action is simultaneously taken to take advantage of the economies of scale that exist for the provision of such services: "...the implementation of even the most modest solid waste disposal system fully complying with the existing regulations and statutes will usually be too expensive for the individual communities."²⁵ The efficient size unit for waste disposal is usually larger than one city or town, and the State Bureau of Solid Waste Disposal estimates that regionalization of such services can

reduce the expenditures to one-half or one-third the per ton costs of a comparable standards-compliant town-by-town system. One would expect that passage of stiffer pollution-control laws would thus give cities and towns the incentives to cooperate, but no community wants the (larger) regional disposal facility located on its own territory. As a result, "permissive" legislation with respect to the establishment of regional disposal districts has resulted in the formation of only two functioning districts within the Commonwealth.

An example of the cost impact of the stiffer regulations is the following excerpt from the 1970 Fairhaven town report (Board of Public Works): "Disposal increase is attributable mainly to the State of Massachusetts' 'no outside burying' regulation requiring all burnables to be buried. The increased scope of the above operation is supported by the following: in the year 1969, seven men were assigned this function for three days per week. In the year 1970 it has been necessary to assign ten to eleven men for this operation five days per week."²⁶

Similar evidence drawn from cities and towns throughout the Commonwealth explain the doubling of solid waste disposal expenditures for municipalities from \$10,960,801 in 1967²⁷ to an estimated \$20,918,000 in 1970.²⁸ Moreover, future increases in expenditures for sewage treatment facilities operation can be expected when the growing number of plants under construction (largely with federal and state funds) become operational.

State financing can be part of a centrally-planned regionalized operation of solid and liquid waste treatment and disposal to avoid the problem of individual disincentives against joining in a regional

effort. A bill before the General Court in 1973 (Senate 815, House 6643) proposes mandatory regional solid waste disposal districts, but assesses costs on participating municipalities. This suffers from the same criticisms as all such regional programs financed by local property taxes and has been opposed by the Metropolitan Area Planning Agency. Thus state financing should insure compliance of all disposal operations in the state with current regulations to minimize negative externalities. Some cities and towns presently impose user charges for sewers. This report suggests that these revenues be retained by the cities and towns, under the shift of disposal financing to the state, to offset waste collection costs incurred by cities and towns.

Impact of Service Level Changes

The costs shown in the accompanying tables indicate no change from 1970 costs attributable to anticipated changes in service levels, although it is assumed that under state takeover of financing, all sewage and solid waste systems will be in compliance with existing pollution abatement regulations.

For solid waste disposal, costs will not be significantly affected by expected improvements in service because it is assumed that the establishment of regional facilities will accompany the state financial takeover. Bringing all solid waste operations into compliance will double the 1970 per ton operating costs for sanitary landfill (replacing dumping) facilities and will require increases over 1970 expenditures for incineration for all but one of the operating incinerators within the state. This compliance will probably not occur without state takeover since, as previously

noted, unilateral efforts by individual cities and towns impose heavy financial burdens. The Director of the State Bureau of Solid Waste resigned in November 1972 on the ground that there was no firm state commitment to implementation of the regional plans. His analysis, therefore, assumes that state takeover means regional systems along with compliance. Since regionalization of operations should halve the cost per ton of processing city and town wastes, the net effect should be very little change in total disposal costs. It must also be noted, however, that with regional disposal facilities, individual cities and towns will be faced with higher costs of waste collection in conveying the refuse to the regional disposal site, a cost they will continue to bear under this proposal.

A different approach is appropriate for sewage treatment and disposal because compliance is currently being achieved without state takeover. The State Department of Natural Resources reports that over ten new treatment plants have been completed since 1970, ten are under construction, and five are in the planning stage. This construction is being undertaken primarily with federal state funds: the matching provisions until October 1972 were 55 percent federal, 25 percent state; the new federal law provides for 75 percent federal grants, the effect of which is to reduce the state's share to zero until new legislation is passed. Most of these grants are allocated to towns which previously had no sewage treatment; a few are for alterations to existing plants. Because compliance is occurring without state takeover, the increase in costs resulting from such compliance is not attributed, in this analysis, to the proposed financial takeover.

TABLE II-4

EXPENDITURES FOR WASTE DISPOSAL, CITY OF BOSTON, 1970

A. Solid Waste Disposal (Public Works)	
1. Incinerator	
Operating costs	\$1,272,597 ¹
Amortization of plant	
(principal and interest)	331,631 ²
2. Gardner Street sanitary landfill	415,578 ³
3. Garbage disposal (by contract- Victory Road, Gardner Street)	31,200 ⁴
Total Solid Waste Disposal	\$2,051,006
B. Sewage Treatment and Disposal	
1. Pumping - Calf Pasture (Public Works)	306,739 ⁵
2. MDC sewerage assessment	4,106,880 ⁶
Total Sewage Disposal	<u>4,413,619</u>
Total Sewage And Solid Waste Treatment and Disposal	\$6,464,625

*Understates true cost because the figure excludes the amortization of plant.

1. Annual Report of the Public Works Department of the City of Boston for Year Ending December 31, 1970, p.118.
2. Ibid.
3. Ibid.
4. Ibid., p. 116.
5. Ibid., Table 8 p. 123 (product of pumping cost per million gallon times sewage pumped).
6. Public Document 92, 1970, p. 22.

TABLE II - 5

ESTIMATED EXPENDITURES FOR WASTE DISPOSAL
FOR ALL MUNICIPALITIES EXCLUDING BOSTON, 1970

A. Solid Waste Disposal (Estimate for all cities and towns excluding Boston)		\$18,857,000 ¹
B. Sewage Disposal and Treatment MDC assessment on cities and towns excluding Boston	8,311,011 ²	
Other cities and towns in state (estimate)	3,520,000 ³	
Subtotal sewage		<u>11,831,000</u>
Total Sewage And Solid Waste Treatment And Disposal		\$30,688,000

1. See text, and footnote 22.

2. Public Document 92, 1970, p.22.

3. Estimate based on average sewage treatment costs per million gallon flow calculated from selected available town data and actual sewage flows reported in "Municipal Wastewater Treatment Plants January 1971," Massachusetts Department of Natural Resources, Division of Water Pollution Control.

D. COUNTY COURTS

Rationale for State Financing of Court System

The costs of operating courts in Massachusetts are shared by the state, the City of Boston, and the thirteen counties outside of Suffolk County. The approximate proportions of this sharing arrangement are as follows: the state -- 20 percent; the City of Boston -- 20 percent; and the outside counties -- 60 percent. It should be pointed out, however, that the net costs of courts allocated to counties other than Suffolk are assessed against cities and towns within such counties.

The logic involved in having the state assume the entire costs of operating the courts may be found in Article XI of the Declaration of Rights in the Constitution of the Commonwealth of Massachusetts.

Every subject of the commonwealth ought to find a certain remedy, by having recourse to the laws, for all injuries or wrongs which he may receive in his person, property, or character. He ought to obtain right and justice freely, and without being obliged to purchase it; completely, and without any denial; promptly, and without delay; conformably to the laws.

Certainly a liberal interpretation of the above provisions would conclude that the administration of justice is a function of the sovereign power of the state. It is the concern of the commonwealth as a whole and not of any of its political subdivisions.

Inequities and Inefficiencies of Present System

The inequity and inefficiency of the present system of fragmented responsibility as between county and state government for court administration would also support this proposal for state assumption of the entire costs of operating the courts.

The present arrangement of divided financial responsibility is both illogical and inconsistent. The following are glaring examples of such inconsistency. The probate courts serve the counties in which they are located. Yet their justices and registers are paid by the commonwealth. The clerks of court who serve the state-wide supreme judicial and superior courts for their respective counties are paid by such counties, but the judges of these two courts are paid by the state, and auditors and masters appointed to help them carry out their judicial functions are paid by the counties.

Probation is now recognized as a state system. The commissioner of probation, his deputy, probation officers attached to superior courts are paid by the state, while the probation officers assigned to district courts continue to be paid by the counties.

The distribution of court fines and penalties is also illogical. Fines imposed by district courts are paid to the cities and towns in which the offenses occurred; but if a case is appealed to the superior court and a fine is imposed by such court, the county receives the fines. But there is a major exception: fines imposed under the motor vehicle law (Chapter 90 of the General Laws) are paid to the counties no matter which court levies them.

There are sixteen major governmental units dealing financially with the courts. These include the Commonwealth of Massachusetts, the City of Boston acting on behalf of Suffolk County, the thirteen counties outside Suffolk, and the Suffolk County Court House Commission, the latter agency serving as a special board to operate the Pemberton Square Court House in Boston. Thus, sixteen court jurisdictions maintain sixteen sets of books, and independently

purchase supplies, hire employees, let contracts -- all to accomplish a single major goal, to make justice accessible to all residents.

The dynamic governmental entities within this court non-system which have legislative power are the state and the municipalities. The county has degenerated into a kind of convenient middle administrative echelon for handling state responsibilities which in earlier days were thought to be too wide in scope for scattered towns and too local to be operated by the state.

If the administration of justice is a matter of state-wide concern, it follows that the present arrangement under which 80 percent of the costs are borne by one limited class of taxpayers, the property owners, is inequitable. The state as a whole benefits from effective administration of justice. The present complicated system of multiple bookkeeping by sixteen independent units and the voluminous auditing requirement would be reduced considerably if it were concentrated under a single authority. It is also reasonable to expect that consolidated purchasing and contracting would result in economies.

Recent court legislation seems to be equivocal on the issue of restoring logic and equity to fiscal arrangements governing the state's judicial system. For example, an act of 1972 establishing the Intermediate Appellate Court provides for direct State financing of the salaries of justices, clerks, miscellaneous office expenses, quarters and facilities. Although this legislation requires the counties to pay the salaries of sheriff-appointed court officers (chief deputy sheriff, assistant deputy sheriff and six court officers) amounting to over \$100,000 a year, it also provides for

state reimbursement of such court officer salaries, except for \$850.²⁹ On the other hand, the legislature exhibited a reverse trend in authorizing a separate Housing Court of the City of Boston. This gives Boston city-wide jurisdiction over "any general or special law, ordinance, rule or regulation as is concerned with the health, safety or welfare of any occupancy of any place used or intended for use as a place of human habitation." This court also has equity jurisdiction concurrent with the district, probate, superior and supreme judicial court in all housing cases or matters within its purview.³⁰ All expenditures of the court are financed by the City of Boston through Suffolk County. Authorized appropriations in 1973 amounted to over \$233,000.

Impact of Future Service Level Changes

Net expenditures for county courts in Massachusetts totalled \$30,566,000 in 1970 -- \$7,515,000 for Suffolk County (assumed entirely by the City of Boston) and \$23,051,000 for the remaining 13 counties of the Commonwealth. If the state assumes all of the net costs of county courts, its total financial obligation would increase slightly to cover county court activities added since 1970. If a separate housing court is authorized for the cities of Springfield and Worcester (following the precedent with juvenile courts), a shift of net court costs to the state should also include expenses for these separate courts, the expenditures of which would approximate \$100,000 a year, in addition to the \$233,000 for the Boston Housing Court.

E. COUNTY CORRECTIONS

Introduction

Proposals to shift the administration and financing of correctional

services are not a new issue in Massachusetts. Integration of county correctional activities with those of the state was recommended by a special commission established by the General Court as far back as 1918. In 1962, the Report of the Governor's Committee on Jails and Houses of Correction advocated consolidation of the county and state correctional systems to achieve development of a unified progressive correctional philosophy incorporating new methods of treatment.³¹ Finally, in November 1972, following public hearings, the Committee on Penal Matters of the Boston City Council filed a report which concluded that "the City of Boston does not belong in the field of penology. This should be the sole responsibility of the Commonwealth from the time that sentence is pronounced and incarceration imposed on a defendant."

Rationale for Integrated Correctional System

A number of reasons are usually cited to support proposals for shifting the administration and financing of county correctional institutions to the state. On the fiscal side, county correctional facilities are supported by property tax revenues from the cities and towns within the particular county. For example, Boston pays the entire Suffolk County budget, including the \$3 million cost of the Jail and House of Correction. In the past, Boston also paid Middlesex County for juveniles sent to the Middlesex County Training School. However, county training schools were recently discontinued. The Committee on Penal Matters of the Boston City Council found that many of the inmates in county penal institutions are not county residents but rather committed a crime within the county jurisdiction. Moreover, there are wide variations in wealth among counties which

generate disparities in the quality of correctional services provided. The financial case against local training schools was even more clear. Several counties tended to send children to such schools, as was the case with Boston, but other counties remanded problem children to the State Youth Service Board. For these cases the counties avoided direct expense. Problem children are now the sole responsibility of the State Department of Youth Services, financed entirely with state funds.

In addition to considerations of inequitable fiscal burdens are the strong arguments that administration and the quality of facilities at the county level are inadequate, that rehabilitative programs are available only at a few county institutions, and that new, hopefully more effective correctional policies can be carried out under a unified state program.

The Deer Island House of Correction and the Suffolk County Jail have been criticized consistently for lack of rehabilitation programs, lack of adequate living facilities, lack of segregation of inmates by severity of crimes, and on other grounds.

The state, on the other hand, has embarked on an ambitious program of correctional reform which emphasizes the importance of more extensive and better rehabilitation and greater communitization of inmates convicted or charged with less severe crimes. The inmates of county facilities fall into this latter category, although they are subject to the most primitive kind of institutional incarceration.

Impact of Service Level Changes

The current system of county jails and houses of correction

costs about \$10 million a year for services which focus by and large on simple incarceration. If the state took over this system, it can be expected that total costs assumed by the state would increase as the traditional system is reorganized and inmates are transferred either to state correctional institutions or to community-based treatment centers. State officials in the Office of Human Services have prepared rough estimates of the costs of such a transfer. The transfer plan provides for a four-year phasing-in schedule which requires additional expenditures linked to continuing fixed costs of the old system as it is being phased out. Their estimate of final cost is fixed at \$8,000 per inmate, based on the experience with residential treatment centers for youth. This yields a total cost of \$14.4 million, some \$4.4 million over present costs. The operating expenditures for inmate institutionalization vary considerably, depending on the size of the facility and the service rendered. The average cost of incarceration for the county correctional system is about \$5,000 per inmate in institutions providing minimum rehabilitation services. The average cost per inmate in state correctional institutions varies between \$5,500 and \$8,500 in cost per inmate. Smaller treatment centers range in average cost between \$5,000 and \$10,000, depending on the size of population. Halfway houses cost about \$1,500 per inmate for a 3-month stay or \$6,000 per inmate year. Without knowing the precise kind of services that will be instituted, it is difficult to predict a total cost, except to emphasize the assumption that the greater the use of community-based treatment centers, the lower the cost to the state.

What is predictable is that the shift to state financing will

bring some increases in cost because the county correctional system is crowded and understaffed. However, it is probable that the state will not provide community-based treatment for all inmates who would benefit from it; therefore a sizable proportion of county inmates will be transferred to existing state institutions as new short-term facilities are developed.

It is assumed in this report that an integrated state system of corrections will cost on the average between \$8,000 per inmate for ideal community-based treatment and the incarceration cost of \$5,500 per inmate. Thus an average cost of \$6,500 per inmate for the 2,000 inmates of county jails and houses of correction, assuming some incarceration and some short-term treatment will cost \$13 million, about \$3 million in excess of 1970 total expenditures.

TABLE II-6

1970 EXPENDITURES FOR COUNTY CORRECTIONS IN MASSACHUSETTS
AND ESTIMATED COSTS TO STATE OF STATE FINANCING FOR COUNTY CORRECTIONS

Suffolk County:

Jail	\$1,317,839	
<u>Less Departmental Receipts</u>	<u>(66,316)</u>	
Net Expenditures for Jail		\$1,251,523
Penal Institutions Department	1,842,316	
<u>Less Departmental Receipts</u>	<u>(8,293)</u>	
Net Expenditures for Penal Institutions Department		<u>1,834,023</u>
Total Net Expenditures for Corrections, City of Boston		\$3,085,546

Counties Other than Suffolk:

Net Expenditures for Jails and Houses of Correction	6,811,144
Cost to Commonwealth for County Corrections, 1970	9,896,690
Estimated Cost to Commonwealth for County Corrections Based on Assumptions re Service Level Changes	\$13,000,000

Sources: City of Boston and County of Suffolk, Annual Report, Auditing Department for the Year, 1970; Commonwealth of Massachusetts, Statistical Reports of the Commissioner of Correction for Year Ending December 31, 1970 (Public Document No. 115).

F. VETERANS' SERVICES

Overview of Program

Laws of the Commonwealth of Massachusetts require that cities and towns extend benefits to needy veterans residing within their local jurisdictions. Providing income maintenance and social services, this program is separate from public welfare. The costs are shared by municipalities and the Commonwealth. Each city or town operates a veterans' office, and the local veterans' service agent is an employee of the respective municipality. Benefit levels and eligibility requirements are set by the state. The state, through its Office of Veterans' Services, reimburses the localities for 50 percent of the costs of assistance they provide to veterans. However, the state does not reimburse municipalities for the administrative expenses incurred by veterans' service agents or veterans' service offices.

In 1970, the Commonwealth and its political subdivisions spent approximately \$33 million for veterans' services. Boston spent about \$7.5 million for this program and received reimbursements from the state totalling \$3.8 million. Currently, Massachusetts is the only state which operates an assistance program of this magnitude for veterans. In most other states, a few services are provided by either state or local veterans' offices and the major portion of aid and rehabilitative services are provided under state and federal categorical welfare programs for which most indigent persons, including veterans, qualify.

Another aspect of this issue is the legal requirement that

the state must operate a separate administrative structure for this independent program of income maintenance and social services which is similar to that of the Department of Public Welfare, the administrative agency for state and federal categorical assistance programs.

Rationale for State Financing

Human services in general are becoming increasingly recognized as a state-federal as opposed to a local responsibility. For veterans' services the case for state-federal assumption of fiscal responsibility and for state assumption of administrative responsibility is a strong one. Localities do not have discretion concerning veterans' assistance because Massachusetts law mandates that they be carried out. Localities certainly have no control over the numbers of veterans that will require aid within their jurisdiction. While in the armed forces, veterans serve the country as a whole which reinforces the argument that the federal government should share the responsibilities for providing for needy veterans.

If the present machinery of veterans' benefits disbursements were maintained, the financial burden of its operation could only be removed from cities and towns if the state assumed the full costs thereof. This is due to the fact that the present system of veterans' assistance does not qualify for federal funds to any significant extent. Aside from the issue that veterans' benefits involve no federal sharing of costs, the existence of this system means a duplication of administrative operations with those in public welfare.

Proposed Reorganization

The Governor and his Executive Office of the Secretary of Human Services recently proposed a major overhaul of veterans' services. Under these recommendations the state would no longer reimburse cities and towns for the disbursement of veterans' benefits. Cities and towns would have the choice of whether or not to maintain the veterans' offices and agents, for which they currently pay the full costs, and to perform whatever advocacy services the locality deemed necessary. The costs of income maintenance and rehabilitative services would be borne by the state and federal governments by transferring eligible veterans to appropriate state and federal categorical assistance programs. A new state Office for Veterans would be established to assist veterans in obtaining benefits to which they are presently entitled under state and federal statutes. Certain specialized services, such as aid to permanently disabled veterans, would be administered by the Office for Veterans. This office would also carry out such activities as the maintenance of graves, Memorial Day functions, and other veterans-oriented advocacy roles. Veterans qualifying for particular welfare programs would receive their benefits through the disbursement mechanisms of categorized programs such as General Relief, Aid to Families with Dependent Children (AFDC), or Old Age and Disability Assistance.³²

The total costs of this proposed new system and the state's share of such costs are difficult to predict. The difficulty is that it is not clear which veterans now receiving veterans'

benefits would qualify for which state and federal programs. State-financed General Relief benefits are somewhat lower than current veterans' benefits, which in turn are less than federally-assisted AFDC payments. Moreover, the individual categorical welfare programs have varying provisions for recipient retention of a portion of earnings while remaining eligible for benefits. State officials are considering some supplementary aid for veterans who would qualify for General Relief so that they would not suffer a diminution of assistance. The Executive Office of the Secretary of Human Services has prepared some tentative estimates which indicate that under the reorganization proposal, the state itself would face a relatively modest net increase in cost of about \$1.5 million a year over the present system; most of the present local share of veterans' assistance would be shifted to the federal government. This arrangement represents an equitable means of achieving state-federal sharing of veterans' welfare benefits.

The implications of this proposal for Boston and other localities would bring an end to direct local expenditures for veterans' benefits. The cost estimates in the accompanying table are based on figures provided by staff of the Executive Office of the Secretary of Human Services. These figures incorporate assumptions about the distribution of veterans into existing state and federal categorical welfare programs. In addition, the cost estimates allow for maintaining existing levels of benefits and services to veterans, increased administrative allotments for the offices handling larger case loads, and the establishment

of a new Office for Veterans. The estimates in the table are also based on the assumption that municipal expenditures for veterans' services other than those covering direct benefits to recipients will remain the same. For Boston, this amounts to about \$500,000.

TABLE II-7

1970 EXPENDITURES FOR VETERANS' SERVICES AND ESTIMATED COSTS
OF STATE ASSUMPTION OF VETERANS' SERVICES

Expenditures of City of Boston, 1970	\$ 7,524,537
Expenditures of City of Boston for Direct Benefits, 1970	6,939,033
Direct Income, Department of Veterans' Services, City of Boston, 1970	(85,081)
State Reimbursements to City of Boston for Direct Benefits, 1970	(3,802,524)
Net Expenditures, City of Boston, 1970	\$ 3,636,932
State Reimbursements to Cities and Towns other than Boston for Veterans' Benefits, 1970	\$12,851,775
Estimated Net Expenditures by Cities and Towns other than Boston for Veterans' Benefits, 1970	13,017,000*
Total Net Local Expenditures for Veterans' Benefits, 1970	\$16,654,000
Cost to State of 100% Financing of Veterans' Programs and Benefits by State and Federal Governments	\$33,309,000
Estimated Net Increase in State Costs Attributable to Transfer of Veterans' Programs to State and Federal Categorical Programs	1,500,000
Total Estimated Cost to State of Proposed Change	\$18,200,000

*This is an estimate derived from the state reimbursement figures.

Sources: Annual Report of Commissioner of Veterans' Services 1970-71
P.D. 68; Boston Program Budget 1972.

G. HEALTH AND HOSPITAL SERVICES

Public Health-Hospital Service Patterns: An Overview

The state-local pattern for the allocation of responsibilities in public health and public medical care facilities in Massachusetts and the arrangement for financing these services in this state have remained substantially unchanged during the century since the establishment of the State Department of Public Health (1869). Cities and towns in Massachusetts, many of which have local boards of health ante-dating the state health agency by a half-century (Boston's health department goes back to 1799), continue to serve as the primary jurisdiction for providing varying bundles of services aimed at preventing and controlling disease, prolonging life and improving environmental and health conditions in their communities. For the most part, particularly in preventive and treatment services designed for individuals and the family, as contrasted with programs for upgrading the environment, public health and medical care activities provided by state and local governments have been directed mainly at those financially unable to care for themselves. This emphasis on serving the personal health needs of the poor and the disadvantaged and on meeting the environmental health needs of the total community characterizes the client groups of both state and municipal programs.

The state's role and program in public health and mental health, and to a lesser extent the nature and scope of municipal health activities, have generally reflected major trends in disease patterns, social concerns and values, advances in medical knowledge and medical technology which have taken place during the past several decades. Forces and changes which are having deep impact on both state and

municipal health policies and programs include: rising concern for spiraling costs, especially those for in-patient and institutionally-based services; maldistribution of health services and resources which leaves major gaps and pockets of unserved communities, neighborhoods and population groups; shifting emphasis from in-patient care to comprehensive primary care and preventative approaches; experimentation with alternative arrangements for delivery of primary care and in-patient care; the increasing role of the consumer in the governance of health delivery systems and mechanisms; major threats to the integrity of the environment resulting from drastically-changing consumption attitudes and behavior and relative neglect of environmental protection and conservation measures; increases in longevity and the implications thereof for chronic diseases and degenerative disorders affecting a growing proportion of the population.

Roles of State Agencies

Public health and medical care programs of the Commonwealth of Massachusetts -- conducted mainly through its Department of Public Health, the Department of Mental Health and the Department of Public Welfare -- have attempted to keep pace with the explosive health and medical trends of the past quarter-century as indicated by the substantial increases in investment over the past decade. This is evident in the 1970 expenditure levels shown in Table II-8. For example, total expenditures of the state's two major health agencies and expenditures for medical services provided to clients of the State Department of Public Welfare totalled about \$450 million in 1970. The State Department of Public Health spent \$49.3 million

for operating purposes during the 1970 fiscal year from both state and federal sources of funding. State funds increased by \$23.3 million or 127 percent over 1960. About two-thirds of the department's expenditures are allocated to operating requirements of its seven institutions. In 1970 operating expenditures of these facilities exceeded receipts from patient fees and other income by over \$14 million.

Expenditures of the State Department of Mental Health for 1970 from all sources amounted to \$135.9 million. Expenditures from state funds for this department increased by \$75.4 million, or a similar 127 percent during the 1960-70 period.

The bulk of expenditures by the State Department of Public Welfare shown in Table II-8 is for the federally-assisted Medicaid program shared on a 55-45 percentage basis by the state and federal governments. Total expenditures for Medicaid in Massachusetts now exceed \$400 million a year.

In Massachusetts all public mental health services are integrated within the State Department of Mental Health. Mental health services are provided through a decentralized administrative system of seven regions, including state-operated mental health centers and state hospitals, and through contractual arrangements with private and public agencies. Thus, the mental health function has long been consolidated within a single state agency and financed entirely out of state funds. Municipal health and hospital agencies may deliver mental health services under contract with the state, but all funds for mental health services come from state funds, federal grants, or patient fees.

TABLE II - 8

EXPENDITURES FOR HEALTH AND HOSPITAL SERVICES BY MAJOR HEALTH-SERVING STATE AGENCIES, 1970

<u>Agency</u>	<u>Expend. from State Funds</u>	<u>Departmental Receipts</u>	<u>Net Expend. from State Funds</u>	<u>Federal Grant Expend.</u>	<u>Total Net Expend.</u>
Dept. of Mental Health	\$134,658,550	\$16,101,654	\$118,556,896	\$ 1,216,918	\$119,773,814
Dept. of Public Health	41,719,070	14,169,185	27,549,885	7,654,482	35,204,367
Dept. of Public Welfare	145,370,531	---	145,370,531	118,939,525	264,310,056 ²
Totals	\$321,748,151	\$30,270,839	\$291,477,312	\$127,810,925	\$419,288,237

Source: Comm. of Mass., Financial Report for the Fiscal Year Ended June 30, 1970
(Pub. Doc. 140).

1. Including federal reimbursements.
2. Estimates based on 55/45 state-federal proportions.

The State Department of Public Health, in addition to its key leadership role in public health (a role which includes serving as the major channel for federally-assisted categorical grant programs) finances and monitors health programs carried out by other public and private agencies; provides a variety of direct services to discrete areas or client groups throughout the state; carries out responsibilities in standard setting, inspection, licensing and regulation of health facilities; has exclusive responsibilities in environmental health and protection of the consumer against health hazards; and extends general assistance, consultation and backup to municipal health departments, boards of health and other health delivery agencies. One of the critical current conflicts is the growing complaints of local health departments and boards of health that the state's supportive and technical assistance services are inadequate to meet the needs of cities and towns.

Roles of County Agencies

There are still remnants of a once viable county tuberculosis institution system in Massachusetts, which reached its peak during the height of concern over this disease during the 1910-1940 period. Of the nine counties which operated such facilities, only six (Barnstable, Hampshire, Middlesex, Norfolk, Plymouth and Worcester) are currently in operation. Barnstable County has converted its institution to a general hospital in support of a county health department established under a special act of 1926 to serve communities of this county. The other five counties took advantage of 1961 legislation authorizing transformation of their dwindling institutions into chronic disease facilities while retaining a proportion of beds for TB purposes. All county institutions are financed by a

combination of patient charges and assessments levied on cities and towns in such counties to make up the difference between expenses and available receipts. In 1970 the Barnstable County Hospital financed all of its requirements from hospital sources of income. The others incurred deficits made up by assessments, as indicated in Table II-9.

County hospital assessments are financed from locally-raised property taxes. As the treatment of tuberculosis has shifted from an in patient to an out-patient approach, there has been a steady decline in assessments for county hospital purposes. By 1970, assessments had decreased to \$3.8 million.

Roles of Municipal Agencies

Cities and towns in Massachusetts expended \$106.9 million for health and hospital services in 1970, the details of which are shown in Table II-10. Excluded from this total are county assessments on cities and towns for county hospitals and relatively minor expenditures from federal grants for health and hospital purposes. Over 75 percent of the total is attributable to the expenditures of 17 municipally-owned hospitals (10 general and 7 chronic disease) located in 10 cities and 4 towns of the state. The remaining

TABLE II-9

COUNTY HOSPITAL MAINTENANCE ASSESSMENTS, 1970

<u>County</u>	<u>Maintenance Assessment</u>
Hampshire	\$ 23,843
Middlesex	1,802,283
Norfolk	466,270
Plymouth	650,423
Worcester	810,695

Source: Comm. of Mass., Bureau of Accounts, Annual Report on the Statistics of County Finances for the Year Ending December 31, 1970 (Pub. Doc. No. 29), Table No. 10.

proportion -- about \$24 million -- is for services rendered by local health departments and local boards of health for health clinics (well child, immunization, dental, etc.), other personal health services, and environmental health services (animal inspection, plumbing inspection, nuisance control, etc.).

The relatively small and steadily-declining number of municipally-operated hospitals indicates that most in-patient hospital services in Massachusetts are provided by voluntary and proprietary hospitals rather than municipal institutions. The 10 cities which still operate hospitals are those having long and proud traditions with such facilities, many of which competed effectively in the past with hospital institutions under private sponsorship. In recent years, however, a combination of escalating costs, aging facilities, a contracting service radius, professional staff shortages and declining patient loads resulting from widening patient choices for low income people under publicly-aided medical programs have cut deeply into the viability of both general and chronic disease hospitals operated by cities and towns.

For example, the City of Lawrence is under state orders to close its Burke Memorial Hospital used mainly for elderly, chronic disease patients, because of failure to meet state standards, reluctance of the state to issue the certificate of need for making physical renovations and declining patient load and staffing difficulties.

Of the 17 municipal hospitals, 11 incurred operating deficits in 1970 and most of them have been plagued by chronic deficits despite remarkable and steady improvement in hospital receipts

during recent years from third-party payments. Municipal institutions with deficits in 1970 included the 3 hospitals in Boston, 2 in Cambridge, and the hospitals in Danvers, Fall River, Haverhill, Lawrence, Salem and Worcester. Their total operating deficits in 1970 exceeded \$11 million, of which about \$8 million was attributable to the in-patient services of the municipal hospitals in Boston and \$1.3 million to the hospitals in Cambridge.

It should be pointed out, however, that even in Boston and Cambridge, the municipal hospitals in 1970 and subsequent years have been covering 75-80 percent of institutional expenses from hospital receipts. In fact, to keep the gap between hospital receipts and expenditures from widening, City officials in Boston took drastic budgetary action in 1973, including a major reduction in the number of in-patient beds and commensurate reductions in related services.

The remaining hospitals -- all general, except for Springfield-- either broke even or experienced varying operating surpluses in 1970. By and large municipal institutions which operate in the black have many of the characteristics of a community-wide, broadly-based and supported non-profit facility. With the steady growth of third-party payments (particularly those provided under Medicare and Medicaid), they have been able to achieve healthy levels of self-support and have not become additional burdens to local taxpayers.

In addition to the operating deficits totalling some \$11 million for municipal hospitals, net expenditures for all other municipal health services (receipts from clinic fees, health license and permit fees, etc. were deducted from gross expenditures) amounted to

TABLE II - 10

EXPENDITURES FOR HEALTH AND HOSPITAL SERVICES BY MUNICIPAL AGENCIES, 1970

	Expend. from <u>City Funds</u>	Departmental <u>Receipts</u> ²	Net Expend. <u>from City Funds</u>	Expend. by <u>School Depts.</u> ²	Total Net <u>Expend.</u>
City of Boston	\$ 48,143,547	\$36,274,992	\$11,868,555	\$ 821,000	\$12,689,555
All Municipalities Excluding Boston	58,792,354	43,691,453	15,100,901	3,889,000	18,989,901
Totals	\$106,935,901	\$79,966,445	\$26,969,456	\$4,710,000	\$31,679,456

1. Excludes federal grants.

2. Estimates based on per pupil costs for school health services with the deduction of an average proportion of general school aid under c. 70 G.L. prorated for school health services.

Sources: City of Boston and County of Suffolk, Auditing Department, Annual Report for the Fiscal Year Ending December 31, 1970 (1972); State Bureau of Accounts, Schedule A, Municipal Receipts and Payments, 1970 (Office of Bureau of Accounts); selected annual reports of cities and towns for 1970; Division of Research and Development, State Department of Education data on per pupil costs for school health services and on number of pupils.

another \$16 million. Of this total, about \$5.8 million was spent by the 312 towns in the state; the remaining \$10.2 million by the 39 cities in the state, almost one-third of which was spent by the City of Boston.

As shown in Table II-10 the school departments of the state also incur significantly large expenditures for health services, mainly for school physician and nursing services. In a few cases, e.g., the town of Brookline, expenditures for the local health department include the cost of providing health services to the public schools, since all health services have been consolidated under municipal auspices. By and large, however, school departments maintain their own health service programs, the total cost of which was estimated at \$6.7 million in 1970. Since general school aid distributed to cities and towns by the Commonwealth is applied to all school expenditures, including expenditures for health services, a reduction by 30 percent in this total (representing an average for school aid) brings the overall figure down to \$4.7 million. About \$3.9 million of this net total was spent by all school departments excluding Boston and a net amount of \$821,000 by the Boston School Department.

Municipal Disparities

Excluding the costs of municipal hospitals, the average per capita expenditure by all municipalities in the state for health and hospitals is about \$3. However, expenditure levels range widely from almost nothing in small towns, which depend largely on services provided by district offices of the State Department of Public Health

and on private health services, to municipal commitments reaching \$5-\$8 per capita in the larger cities and the more affluent communities of the Boston metropolitan area. There are only 20 health departments as distinct from boards of health in the state, which serve about one-third of the state's population; only 10 of them have full-time physicians on their staffs. There are probably under 2,000 persons (in full-time equivalents) employed by local health departments and local boards of health. Wide differences of response to local health responsibilities and programs reflect wide differences in public health traditions, wide differences in concentrations of low income and elderly populations (who represent high priorities for public health services), and wide differences in financial capacity from which to draw resources for public health expenditures.

State Leadership and Financial Assistance

State initiatives to bolster local public health programs have been weak and spasmodic. State laws and regulations provide only broad guidelines for cities and towns to follow in carrying out public health responsibilities. Except for small categorical-type state grants for discrete health activities, state financial assistance is not generally available to help and encourage local health departments and boards of health. In the 1972 fiscal year, state reimbursements for health services amounted to less than \$100,000. Although municipal health and hospital institutions serve as delivery agencies under state-supervised, federally-assisted activities (maternity and infant care, children and youth, crippled children services, cancer control, chronically ill and aged services,

heart disease control, venereal disease control, TB control, etc.), there are no basic state aid programs to strengthen and provide incentives to local health and hospital services. The last major effort to initiate financial assistance came in 1948 with the report of a Special Commission which concluded that Massachusetts lagged behind many other sections of the country in providing local health services, especially in the state's small communities. Not only did the Special Commission recommend a regular state subsidy to assist local health departments in achieving minimum standards of performance and personnel, but it proposed incentives to encourage cities and towns to enter into union health districts. Legislation subsequently enacted authorized the establishment of union health departments but omitted any references to financial assistance. The prevailing sentiments of local autonomy mitigated against passage of legislation which tied financial assistance to minimum standards. Only one union health district has emerged from this legislation.³³

Not until 1961 did the Legislature implement a version of the 1948 Special Commission's specific recommendation to reorganize and consolidate responsibilities for tuberculosis control by using a state subsidy device. Under this legislation, counties and certain cities were relieved of statutory responsibilities to operate tuberculosis sanatoria and all responsibility for the care of TB patients was transferred to the State Department of Public Health. Counties and cities were authorized to close their sanatoria or to convert them into chronic disease hospitals or homes for the aged. The state subsidy for the costs of treating TB patients was increased from \$5 per week to half the per diem costs of care for permanent residents,

the state assuming the full costs of all non-resident persons. The State Department of Public Health has entered into contractual arrangements with the TB sanatorium in Boston and institutions maintained by several counties to provide care under these jointly-financed arrangements.

The major conclusion to be drawn from the preceding discussion is that public health and medical care facilities represent a non-system of state-local health services. The original rationale for complete local autonomy and local financing has proved to be dysfunctional. There are wide gaps in local service, extreme variations in scope and quality of service and a general atmosphere of apathy in most municipalities, with the exception of a handful of cities and towns with solid local commitments and deep traditions of public health services.

Although the temptation is strong to recommend the complete transfer of both the administration and financing of local health and hospital services to the state, using the same arguments which prompted the Legislature to eliminate welfare as a local function, a preferable strategy would be to shift only the net costs of public health and hospital services to the Commonwealth while retaining local administration. This alternative to complete consolidation under state jurisdiction is recommended because the state is not conceptually, administratively or operationally prepared to absorb the local health and hospitals function, and to blend it into ideal social service mechanisms--decentralized interdisciplinary centers meeting comprehensive human resource needs throughout the state. Moreover, several of the hospitals (mainly the chronic disease institutions in cities)

which had their origins in publicly-financed poor farms are in serious states of flux and their continuing viability remains in doubt. Before the state assumes the net cost of such institutions, the decision as to their retention as permanent facilities must be resolved.

Among the major arguments which support state financing for municipal health and hospital services are those bearing on benefits and costs. The benefits of many health services, particularly those directed at individual and family care, are not consumed entirely by residents of municipal jurisdictions providing and financing them. Outsiders, mainly those of low income, are likely to be attracted to municipalities with high quality and readily accessible municipal health and hospital facilities. Alternatively, where municipalities fail to provide such adequate service, the social costs of this neglect spill over into those cities and towns which do. Moreover, municipalities such as Boston and Cambridge, which operate fully-developed medical care facilities, include within their scope of services activities such as nurses training programs and similar programs which may ultimately accrue to the benefit of hospitals in other jurisdictions. Experience indicates, for example, that a majority of nurses trained at the Boston City Hospital continue at the hospital for only two or three years following their City-financed training.

Hospital deficits incurred by state, county and municipal institutions are attributable mainly to their responsibility for population without medical insurance protection or with inadequate third-party medical coverage and with income which is higher than the eligibility limits of publicly-subsidized programs. The deficits

of state hospitals are financed by the state as a whole, however, while the deficits of municipal hospitals represent charges against local property taxes.

To the extent that some municipalities inadequately support programs for communicable disease control, these deficiencies threaten the well-being of communities making the required effort. Although the State Department of Public Health plays a major role in environmental health services, the laws give local boards of health significant responsibilities in this functional area and service deficiencies can spill over into adjoining communities.

Transfer of the net costs of municipal, school and county health and hospital services to the state has been estimated at \$35.5 million. It cannot be concluded with any certainty that this shift of responsibility to the state would not eventually generate higher costs for the Commonwealth. Surely, improvements in service levels to achieve a uniform higher standard would increase total costs. But if national health service legislation is enacted, this dramatic step could conceivably eliminate operating deficits for municipal and county hospitals. Such legislation, moreover, would provide federal financing for out-patient services, primary care, and preventative services, personal health services now financed entirely from municipal and state revenues. As for environmental health control, much of this responsibility has gradually been reallocated to regional and state agencies. Once the financing of such activities has been transferred to the state, a serious review of municipal environmental control responsibilities will be warranted. If jurisdictional changes follow from such study, subsequent reorganization could conceivably

reduce the present level of expenses for this segment of public health. Thus, this report assumes that if the state takes over financial responsibility for municipal, school and county health and hospital services, the 1970 level of expenditures updated to account for cost-of-living changes is a reasonable estimate of the state's obligation.

H. REGIONAL PARKS AND RECREATION

Many parks and recreational facilities are operated and maintained in Boston and surrounding cities and towns by the Metropolitan District Commission on behalf of the 37 municipalities constituting the Metropolitan Parks District. Principal and interest payments on bonds issued to finance capital expenditures of the District as well as 39 percent of the maintenance and operating expenditures of the District are assessed back on the 37 member cities and towns under a combined formula of population and equalized valuations. Types of MDC recreation and park facilities which are located either in Boston or within five miles of Boston's city limits include playgrounds (38), athletic fields (28), skating rinks (27), swimming pools (15), boating areas (16), fishing areas (16), picnic areas (18), beaches (15), and a variety of other facilities and parks.

The historical perspective on the MDC included in the Boston Urban Observatory report, Impact of the State-Local Tax Services Mix on Municipal Finances in the Boston Metropolitan Area: A Preliminary Evaluation, pointed out that the "MDC and its Parks Division are creatures of the state government, completely dependent upon final decisions of the Governor and legislature."³⁴ This arrangement, for example, has encouraged State legislators to exercise control over the location of facilities at the expense of sound regional planning.

More recently, the MDC has been cooperating with the Metropolitan Area Planning Council and the State Department of Natural Resources in moving toward its goal of providing more effective regional services.

Experience of more than three-quarters of a century with the political-financial arrangement for regional park and recreation services in metropolitan Boston brings into question the policy of state assessments on cities and towns to finance such services, especially in light of the fact that the MDC is primarily under state influence and control. In this case, cities and towns are being assessed for services when all basic decisions governing service policies are made by state rather than local officials. Moreover, it is not clear whether the distribution of benefits among the towns and cities of the Metropolitan Parks District is commensurate with assessment proportions. In addition, the argument that the localities should share in the financing of services in order to benefit from the economies of scale inherent in regional operations (as in solid waste disposal and treatment) does not apply to regional land use.

The concept of regional and statewide land use and planning supports the concept of a higher-level of government making the service and development decisions, and also supports the concept of such higher-level government financing the operation.

In his budget message to the General Court of January, 1971, the Governor proposed that MDC assessments levied on members of the Metropolitan Parks District and state assessments on all other municipalities which support the so-called State Recreation Areas Fund be terminated. He suggested that the Commonwealth assume the costs of regional park and recreation services covered by such assessments.

Implementation of the Governor's recommendation would shift \$17.8 million in regional park and recreation assessments to state financing. Of this total, about \$12.6 million would be lifted from member municipalities of the Metropolitan Parks District, including \$4,155,000 from the City of Boston. The remaining \$5.2 million represents assessments imposed in 1970 upon cities and towns outside the Metropolitan Parks District and responsible for sharing in the annual requirements of the State Recreation Areas Fund.

I. VOCATIONAL EDUCATION

Introduction

Like all primary and secondary education in Massachusetts, vocational education is a locally-administered service, except where governed by regional school districts. However, the state financial assistance provisions for vocational education differ from those for other public education in providing for 50 percent reimbursement for all "approved" vocational expenditures. There is a noticeable diversity across the state in the quality and scope of vocational education available to local students, a wide range of service which may be caused much more by disparities in revenues available locally than by differences in tastes for vocational education. The matching formula is not "equalizing" as is the matching for other educational expenditures, and hence does nothing to offset this fiscal constraint.

Supporting Arguments for State Financing

There are several arguments that may be used for shifting all of the financing of vocational education from the city or town to the state. First, of course, is the usual spillover justification: a community pays for the education of its young residents who may then

move to another area, so that the town or city which makes this investment in human resource development gets no return and feels justified in being prudent about educational investment. This effect is particularly visible for specific job training aspects of vocational education programs which prepare students for jobs not available in the municipality supporting them. Those receiving the training and residents and businesses elsewhere in the state where the trainee goes to work receive the benefits. State financing can overcome any tendency to underinvest because of a cost-benefit concern.

Vocational education is also characterized by greater economies of scale than general primary and secondary education. Because not all students take vocational courses, and the training requires a more specialized physical plant than that for general schooling, a larger region is required to provide enough students to make full use of the physical plant, equipment and special instructional staff. Complete state financing as contrasted with the current bonuses for constructing and operating areawide schools (of all types, including vocational) could provide greater incentive for the planning and operation of regional schools by removing more of the present handicap of inter-local fiscal disparities.

In addition (as pointed up by recent court decisions beginning with *Serrano v. Priest* in 1972 in California), "the accident of the residence of a child or youth should not prevent him from receiving clearly defined minimum education opportunities and services."³⁵ The available options and quality of vocational as well as other educational offerings should not depend on the viability of the property tax base of the city or town. Relying on local financial resources

for support has a particularly perverse effect on vocational education because children of higher income parents (who tend to congregate in separate tax jurisdictions) usually prepare for jobs through higher education, whereas those of lower income rely on the public secondary educational system to give them marketable skills; yet low income cities and towns are less able to finance the specialized vocational education activities which can equip students with relevant job training.

A final argument can be made on entirely administrative grounds, given the present laws regarding educational aid from the state of Massachusetts: state financial takeover of vocational education, by eliminating the fiscal disparities issue, could be a key step in the regionalization of Boston's (and other areas') vocational schools. The formation of a regional school district brings to all member cities and towns a 15 percent increase in Chapter 70 school aid (which applies to non-vocational school expenditures as well). For Boston, regionalization of vocational schools would generate a \$6 million increase in state assistance for school purposes.

Special post-secondary vocational programs pose a special problem for Boston. The Boston Vocational Technical Institute has been closed. The Boston Business School still serves an important job preparation function for Boston residents and tuition-paying non-residents in office skills (secretarial, bookkeeping, accounting). However, similar course offerings are available in Boston area community colleges (Roxbury, Massachusetts Bay, Charlestown, Middlesex, and North Shore), which are entirely state-financed, although such courses are generally part of Associate Degree programs. It is suggested that the Boston Business School be terminated and its

"approved" expenditures of regional vocational schools to yield a state estimate of \$21,288,000 for the total additional cost expected to result from changes in service levels when the state assumes 100 percent financing.

TABLE II - 11

EXPENDITURES FOR VOCATIONAL EDUCATION, 1970 AND ESTIMATED
EXPENDITURES RESULTING FROM STATE ASSUMPTION OF
FINANCING

Boston

A.	Boston Business School - Expenditures net of tuition received from patrons		\$ 484,063
B.	Boston Vocational Technical ¹ Institute ² Expenditures net of tuition ²		164,177
C.	Boston Trade High School Expenditures ³ Direct income ⁴ and tuition ²	\$1,365,050 (695,672)	
	Net Expenditures		669,378
D.	Trade High School For Girls Expenditures ³ Direct income ⁴ and tuition ²	569,545 (253,991)	
	Net Expenditures		315,554
E.	Boston Evening Trade School Expenditures including administration ⁴ Direct income ⁴ and tuition ²	52,905 (15,786)	
	Net Expenditures		37,119
F.	Apprentice and Journeymen Classes Expenditures Tuition	153,714 (65,689)	
	Net Expenditures		88,025
Net Vocational Education Expenditures, City Of Boston			<u>\$1,758,316</u>

1. Closed as of July 1, 1972.

2. Tuition received from other school districts in the state. Such payments by municipalities are 50 percent reimbursed by the state.

TABLE II - 11 (cont.)

3. Including administrative costs apportioned on the basis of average daily membership.

4. Direct income includes state vocational education reimbursement (Chapter 74) as well as coop sales and the like.

Source: All figures derived from the Annual Report of the Business Manager to the School Committee of the City of Boston for the calendar year 1970. School Document No. 7-1971.

Rest of State

Because the vocational expenditures to be shifted to the state (as outlined in the text) for the City of Boston closely approximate 50 percent of "approved" reimbursable vocational expenditures (\$1,751,232 in 1970), 50 percent of the "approved" expenditures for all other municipalities in the state are used as an approximation of the amount spent from municipal funds for current vocational operating expenses. This figure is the same as the state (50 percent) reimbursement: \$8,886,500.

J. REGIONAL LIBRARY SERVICES

Introduction

The Library Department of Boston operates a library network of central and branch facilities which provide general circulating services and research and reference services to users. The state extends financial support to the Boston Public Library under three separate programs. The first is a direct per capita grant arrangement under which financial assistance goes to all cities and towns in the Commonwealth with libraries that satisfy minimum requirements. Under the second aid program, also calculated on a per capita basis, support is granted to designated regional libraries, and the Boston Public Library serves as the central unit of the Eastern Regional Library System. The third program provides financial support to the Boston Public Library as the library of last recourse for the entire state. Although the direct grant program has no expenditure guidelines, the regional program and the library of last recourse program

contain spending restrictions.

Non-Residential Use of Boston Public Library Services

It has been estimated by library officials from periodic spot-checking of the addresses of persons served by the Boston Public Library that 50 percent of the Library's general circulating services and 50 percent of its research services represent use by non-city residents. It should be noted, however, that City of Boston residents do benefit from the expanded services made available through the regional library system program.

The above data must be analyzed within the frame of reference of the goals of the state support program. The goals of the regional library assistance program are to strengthen regional libraries by developing new services which become available to the entire region, and to share present specialized resources on a regional basis. The program is not intended to compensate the Boston Public Library for its use by the rest of the state. However, non-resident fees for the use of the Boston Public Library were abolished when the regional program was instituted. Therefore, it can be argued that the regional program does not either in concept or in magnitude of state assistance address the issue of general and specialized library services being provided and financed by the City of Boston for use by the metropolitan area. For example, in 1970 City appropriations for the Boston Public Library amounted to about \$6 million and grants available from the two programs of state assistance which recognize the regional and statewide characteristics of the library totalled about \$1.5 million.

Under a fair formula for financing non-resident services of the

Boston Public Library, state aid should be increased to 50 percent of the total expenses incurred by the library. Several implications of this argument should be noted. First, it implies that the general and research services of the library can be lumped together with the regional programs to get a single dollar amount representing the total cost of library service. This may not be entirely equitable because they represent two different kinds of services, regional services being specialized and earmarked for all users of the region. However, the aggregate dollar cost is the only feasible basis for calculating the proportionate estimated cost of non-resident use. Secondly, the Boston Public Library is the only municipal library in the Commonwealth which has provided regional services as part of its overall operation long before state assistance was available for this purpose. Other designated regional libraries did not provide regional library services of any scale until state aid permitted them to make such specialized services available to an areawide jurisdiction. Therefore, the Boston Public Library can justify additional state support which matches the 50 percent use by non-residents.

Although state financing of 50 percent of the expenditures of the Boston Public Library will not likely generate any significant increases in service levels, the fact that the Boston Public Library opened a major addition to its central facility suggests that state assumption of half its expenses will cost the state more than the \$2,200,000 estimated for 1970 as the shortfall in state financial assistance. By 1973 the impact of the central library addition had increased City appropriations for the Library Department to \$7.1 million. Thus, if the state pays for 50 percent of the expenditures of the Boston Public

Library, as recommended, the additional cost to the Commonwealth will rise from \$2,200,000 to \$2,700,000.

TABLE II - 12

1970 EXPENDITURES OF BOSTON PUBLIC LIBRARY AND ESTIMATED COSTS OF PROPOSED REVISIONS IN STATE AID FOR REGIONAL LIBRARY SERVICES

Library Expenditures, City of Boston, 1970			
From City Appropriations:			
General Services	\$4,636,468		
Research Services	1,438,713	\$6,075,181	
Debt Service		52,000	
		<u>6,127,181</u>	
<u>Less</u> Departmental Income			<u>(95,687)</u>
Net Expenditures from City of Boston Funds		\$6,031,494	
State Aid Allocations to City of Boston:			
Direct Grants to Libraries	174,000		
Regional Library Program	1,300,000		
Library of Last Recourse Program	140,000	<u>1,614,000*</u>	
Total Expenditures and State Aid		\$7,645,494	
Proposed State Aid Reimbursement of 50% of			
Total Library Expenditures		3,822,997	
Net Estimated Additional Cost to Commonwealth		2,200,000	
Net Estimated Additional Cost to Commonwealth			
Attributable to Service Impact Assumptions			
(see text)		2,700,000	

* State grants are available for expenditure without municipal appropriation and represent funding sources in addition to City appropriations.

Sources: Boston City Budget 1973, and Director of Eastern Regional Library Program.

K. AIR POLLUTION CONTROL

Jurisdiction for Air Pollution Control

Air pollution control in the City of Boston is presently the responsibility of both the city and state governments. The city govern-

ment has a municipal Air and Noise Pollution Control Commission funded entirely from its general fund. The Commonwealth operates six regional programs which cover the entire state and which are designed to implement the requirements of the federal 1970 Clean Air Act. The state program is financed 75 percent by the federal government and 25 percent by the state; the state's 25 percent share of each regional program is assessed back to member cities and towns of the regional districts on the basis of valuations and population. At the state level, the federal program is implemented by the Department of Public Health, Office of Environmental Sanitation.

Rationale for State Financing

There are two aspects of the recommendation that all of the administration and financing of air pollution control be shifted to the Commonwealth: the activities of the City's own program should be assumed by the Metropolitan Boston regional program of the state, and the local share of this consolidated program should be financed from the state's general fund. Air pollution is perhaps a classic illustration of externality, and the arguments against local operation of air pollution programs are manifest. A city may have no jurisdictional control over the major sources of pollution affecting its population, nor can it be sensitive to the full costs and consequences imposed on its neighbors of sources of pollution which are within the geographical boundaries of municipal jurisdictional control. Boston and Fitchburg are now the only localities in Massachusetts which operate local pollution control programs. However, the Fitchburg program is being discontinued and in 1973 will become the responsibility of the state regional control district in which it is located by mutual

administrative agreement. Therefore, Boston will be left as the only local government in Massachusetts with its own pollution control program. The gradual disappearance of local responsibility for air pollution control has been matched by an increasing state and federal involvement. Added to this trend in the specific case of Boston is the argument that to some degree the local program duplicates or competes with the activities of the state program, and therefore represents an inefficient use of public resources. Because the state has been legally charged with implementing the federal statute, its expenditures are matched by the federal government, while the local expenditures are not. Therefore, any additional expenditures incurred by the state after assuming total responsibility for Boston's air pollution control activities will have the added benefit of being matched three for one by federal dollars, in accordance with the mandated state-federal pattern of shared responsibility for pollution control.

The second aspect of the recommendation for shifting the administration and financing of air pollution control to the state is that the state-local share does not have any convincing rationale. Assessments have long been a politically expedient way of raising prescribed local shares of service responsibilities in Massachusetts and have been used for other service financing, notably the MDC and MBTA. In the discussion concerning the shifting of the financing of such services to the Commonwealth, it is argued that the program is controlled by the state and decisions are almost entirely out of local hands. The very nature of these regional services belies an argument for local financing. This is true in the case of pollution assess-

ments as well. Air pollution control is a state operated and controlled program, and yet local funds are required for financing. One cannot argue for assessments in this case on the basis of incidence of benefits or incidence of needs for pollution abatement, because there is no necessary connection between incidence and the relative ability to pay as determined by property valuations. An argument for financing on the basis of municipal ability to pay certainly suggests state taxes rather than local property taxes, which are confused by issues of jurisdictional fiscal and wealth disparities and municipal overburden problems.

Pollution does create benefits indirectly, however, to the degree that pollution is attributable to greater economic growth and affluence. The benefits, such as greater industrial production and economies of contiguous location, of activities which cause pollution do not necessarily accrue to the residents in whose jurisdictions these activities are located, but rather contribute to the growth of jobs and income of the larger economy. Therefore, these benefits would be more effectively captured through statewide taxes than local property taxes.

The regional nature of the problem both on the program operation side and the incidence side suggests state operation and financing as more efficient and more equitable than the present practice.

While the Commonwealth would offset part of its additional obligations for taking over the cost of air pollution control assessments and the Air Pollution Control Commission of the City of Boston by making the latter's activities eligible for federal assistance, it is also likely that the elimination of the overlapping and duplicating central city program of air pollution will further reduce the

Commonwealth's increased costs.

TABLE II - 13

1970 AIR POLLUTION CONTROL EXPENDITURES IN MASSACHUSETTS
AND ESTIMATED COST TO COMMONWEALTH OF ASSESSMENTS TRANSFER
AND PROGRAM TRANSFER FROM CITY OF BOSTON TO STATE

City of Boston Expenditures		
Air Pollution Control Commission	\$56,624	
Assessment for Boston Metropolitan		
Air Pollution Control District	<u>29,184</u>	\$ 85,808
Expenditures of All Other Municipalities:		
Assessments for Metropolitan Air		
Pollution Control Districts (5)		
Outside Metropolitan Boston	80,074	
Assessments for Boston Metropolitan		
Air Pollution Control District,		
Excluding City of Boston Assessment	<u>98,117</u>	178,191
Cost to Commonwealth of Assuming		
Assessment Expenditures for all		
Municipalities in the State		207,375
Cost to Commonwealth of Assuming		
Administration/Financing of City of		
Boston Air Pollution Control Program		14,156*
Total Estimated Cost to Commonwealth		\$221,531

* This is the difference between 1970 total expenditures and anticipated federal matching of 75 percent.

Sources: Boston Program Budget 1972; Massachusetts Budget 1973,
Metropolitan Boston Air Pollution Control District -
listing of assessments, mimeographed.

L. SUMMARY OF IMPACT ON GOVERNMENTAL EXPENDITURES OF PROPOSED
SERVICES/FINANCING SHIFTS

The expenditure consequences of the analysis in the preceding sections on specific functions are summarized in Table II - 14. This table shows that the total 1970 cost to municipalities of providing the mix of services which this report recommends be shifted to the state amounts to about \$236,686,000. Although the total of these costs would represent equivalent savings to local governments of such shifts of financial responsibility, it should be pointed out that in many cases the shifts are likely to result in changes in the levels of service. The impacts of these changes have been discussed and costed out on a 1970 base for each function in sections A-K of this chapter; they are further adjusted to reflect additional changes expected through 1973, and these are summarized in column 4 of Table II - 15. The figures for Boston and other municipalities shown in this table (columns 1, 2 and 3) are simply 1970 costs adjusted to expected costs for 1973. The 1973 adjustments for columns 2 through 4 were made as follows: for certain services, where explanatory data are readily available, actual Boston and other municipal or state appropriations or assessments for 1973 have been used; for other services, the 1970 figures were inflated by the 1973 Boston Consumer Price Index. At 1973 levels, the savings to cities and towns amount to \$280,663,999, which represents about 13 percent of estimated total property tax levies for the current year. Assuming that expected service level changes occur, total state expenditures for shifted services would require \$363,182,000 in state taxes. The tax incidence on Boston residents resulting from the shifts in local property taxes to state tax sources is examined in Chapter III.

TABLE II - 14

EXPENDITURES OF MUNICIPAL SERVICES RECOMMENDED FOR SHIFTING
TO STATE, 1970

Function and Service	Net Expenditures for 1970		
	City of Boston	All Municipalities Excluding Boston	All Municipalities
Public Safety:	\$ 2,500,000	\$ 4,800,000	\$ 7,300,000
Police traffic enforcement			
Harbor patrol	213,000	-----	213,000
Crime laboratory	83,000	-----	83,000
Police training	286,000	292,000	578,000
Arson investigation	146,000	-----	146,000
Fire boats	476,000	-----	476,000
Sub-total	\$ 3,704,000	\$ 5,092,000	\$ 8,796,000
Transportation:			
Street maintenance and related street services	\$ 3,757,000	\$12,096,000	\$15,853,000
Public transit	24,940,000	26,705,000	51,645,000
Sub-total	\$28,697,000	\$38,801,000	\$67,498,000
Waste Disposal:			
Solid waste	\$ 2,051,000	\$18,857,000	\$20,908,000
Sewage	4,414,000	11,831,000	16,245,000
Sub-total	\$ 6,465,000	\$30,688,000	\$37,153,000
County Courts and Corrections:			
Courts	\$ 7,515,000	\$23,051,000	\$30,566,000
Corrections	3,086,000	6,811,000	9,897,000
Sub-total	\$10,601,000	\$29,862,000	\$40,463,000
Veterans Assistance	\$ 3,637,000	\$12,852,000	\$16,489,000
Health and Hospitals:			
Municipal health and hospital services	\$11,869,000	\$15,101,000	\$26,970,000
School health services	821,000	3,889,000	4,710,000
County hospital assessments	-----	3,854,000	3,854,000
Sub-total	\$12,690,000	\$22,844,000	\$35,534,000

TABLE II - 14 (cont.)

Function and Service	City of Boston	All Municipalities Excluding Boston	All Municipalities
Regional Parks and Recreation	\$ 4,155,000	\$ 13,654,000	\$ 17,807,000
Vocational Education	1,594,000	8,886,000	10,480,000
Regional Library Services	2,200,000	-----	2,200,000
Air Pollution Control:			
City air pollution control	57,000	-----	\$ 57,000 ¹
Regional assessments	<u>29,000</u>	<u>178,000</u>	<u>207,000</u>
Sub-total	\$ 86,000	\$ 178,000	\$ 264,000 ¹
Grand Total	\$73,829,000	\$162,857,000	\$236,686,000 ²

1. Although Boston spent \$57,000 on air pollution control, if the state assumed financial responsibility, it would spend only \$14,000 to deliver exactly the same services because of federal 3-for-1 matching provisions. Thus, state assumption of air pollution control costs would save municipalities \$264,000 and would cost the state only \$221,000.
2. Because of the air pollution control item (see footnote 1), this figure, which represents the total savings to municipalities resulting from shifting to the state, is not equal to the cost to the state of such a shift. The cost to the state is \$236,643,000.

TABLE II - 15

1973 PROJECTED EXPENDITURES OF MUNICIPAL SERVICES
RECOMMENDED FOR SHIFTING TO STATE

Function and Service	City of Boston	All Municipalities Excluding Boston	All Municipalities	State Totals, with changes in service levels
Public Safety:	\$ 4,124,000	\$ 5,669,000	\$ 9,793,000	\$ 9,793,000
Transportation:				
Street Maintenance	-----*	-----*	-----*	93,289,000
Public Transit	\$34,601,000	\$41,566,000	\$76,167,000	\$76,376,000
Waste Disposal:				
Solid Waste	2,398,000	22,043,000	24,441,000	24,441,000
Sewage	7,509,000	10,848,000	18,357,000	18,357,000
County Courts & Corrections:				
Courts	8,626,000	23,051,000	31,677,000	31,877,000
Corrections	3,435,000	7,583,000	11,018,000	14,470,000
Veterans Assistance	4,344,000	14,680,000	19,024,000	1,670,000
Health and Hospitals:				
Municipal	13,214,000	16,812,000	30,026,000	30,026,000
School	914,000	4,330,000	5,244,000	5,244,000
County Hospital assessments	-----	2,354,000	2,354,000	2,354,000
Regional Parks and Recreation	6,984,000	22,834,000	29,818,000	29,818,000
Vocational Education	1,800,000	18,200,000	20,000,000	22,270,000
Regional Library Services	2,450,000	-----	2,450,000	2,950,000
Air Pollution Control	96,000	198,000	294,000	247,000
Grand Total	\$90,495,000	\$190,168,000	\$280,663,000	\$363,182,000

* Municipal highway and highway-related expenditures from local funds are covered by Chapter 497 state aid enacted in 1971.

FOOTNOTES
TO
CHAPTER II

1. For a complete discussion of the four criteria, see Jerome Rothenberg, "Local Decentralization and the Theory of Optimal Government", M.I.T. Department of Economics, Working Paper No. 35, December, 1968.
2. A detailed discussion of this criterion appears in James C. Charlesworth's "Allocation of Responsibilities and Resources Among the Three Levels of Government", Henry W. Reynolds, Jr. (sp.ed.) in Intergovernmental Relations in the United States (Phila. 1965), The Annals of the American Academy of Political and Social Science, pp. 71-80.
3. This criterion is discussed in detail in Mancur Olson, Jr., "Strategic Theory and its Applications, The Principle of 'Fiscal Equivalence': The Division of Responsibilities among Different Levels of Government", in American Economic Association, Papers and Proceedings, vol. 59 (May, 1969), pp. 479-487.
4. This type of effect is suggested in Jerome Rothenberg, "The Impact of Local Government on Intra-Metropolitan Location", M.I.T., Department of Economics, Working Paper No. 45, March, 1971.
5. Arthur P. Solomon and George E. Peterson, "Property Taxes and Populist Reform", The Public Interest, No. 30, Winter, 1973.
6. Robert Engle, "De Facto Discrimination in Boston Residential Assessments", unpublished paper, M.I.T., 1973.
7. It is estimated that about half the local police departments in Massachusetts share their resources; some three-fourths of all police forces have plans for cooperative strategies in emergency situations. Among the important formal cooperative agreements providing for the sharing of resources and criminal information are such associations as the Greater Boston Police, the Northern Middlesex Chiefs Association, the South Metropol District and the Springfield Mutual Aid Group. From Mass. Committee on Law Enforcement and Administration of Criminal Justice, 1972 Comprehensive Criminal Justice Plan (1972), pp. A-7-8.
8. "The Economics of Urban Police Protection: A Research Note", Appendix B in Advisory Commission on Intergovernmental Relations, State-Local Relations in the Criminal Justice System (Washington, D. C., August, 1971), p. 304.
9. Based on 1971 cordon count which indicated that 677,995 persons entered the downtown area by automobile and 244,610 by public transportation.

10. Op. cit., "The Economics of Urban Police Protection: A Research Note".
11. Midwest Research Institute, A Joint Study of Crime Laboratories for Commonwealth of Massachusetts (December, 1971), p. 14.
12. Ibid., p. 5.
13. Op. cit., 1972 Comprehensive Criminal Justice Plan, p. B-20. .
14. Advisory Commission on Intergovernmental Relations, Performance of Urban Functions: Local and Areawide (September, 1963), pp. 126-127.
15. James P. Murphy, Is the Municipality Liable for Insufficiently Trained Police? (Orono, Maine: Bureau of Public Administration, University of Maine, 1968), p. 1.
16. Section 96 (B), C. 41, Mass. G.L.
17. Donald R. Courtney, "A Critique of the Massachusetts Police Training Council" (March, 1973), unpublished manuscript.
18. See Division of Fire Prevention, Department of Public Safety, Report of Fires and Explosions for the Year Ending December 31, 1969.
19. Amendment of Section 3, C. 148, Mass. G.L., effective July 24, 1945.
20. Boston Municipal Research Bureau, "Costs of Fireboat Service Can Be Lower" (February, 1971).
21. "Phase II Reorganization, Secretariat of Transportation and Construction," Statement by Secretary Alan A. Altshuler, January 12, 1973, p. 1.
22. Ibid, p. 2.
23. Massachusetts Department of Public Works, A Statewide Highway Transportation Plan, Volume I: Road and Street Responsibilities, A Functional Classification (1968) p. 33.
24. MBTA Recess Commission Report to Governor Francis W. Sargent, The Financing and Organization of the Massachusetts Bay Transportation Authority, (January, 1973), p. 26.
25. Raytheon Service Company, Solid Waste Management Study Report, Vol. I, p. 4.
26. Annual Report, 1970, Town of Fairhaven, Massachusetts, p. 70.

27. U.S. Department of Public Health, National Survey of Community Solid Waste Practices, Inventory of Community Solid Waste Practices in the Commonwealth of Massachusetts, computer printouts available at Mass. Dept. of Public Health, Community Sanitation Division.
28. Estimates derived from conversations with staff at DPW Bureau of Solid Waste Disposal and regression results from Raytheon Solid Waste Management Study Report, Vol. II, Section 3.
29. C. 740, Acts and Resolves of 1972.
30. C. 843, Acts and Resolves of 1971.
31. Senate Doc. No. 1077 (1965).
32. From two papers prepared by staff of the Office of the Secretary of Human Services: "Reorganization of Human Services" (January 8, 1973); and "Veterans' Legislative Fact Sheet" (Undated).
33. Report of the Special Commission to Study and Investigate Certain Public Health Matters (House No. 2100), Dec. 1, 1948.
34. December, 1972, p. 110.
35. Massachusetts Advisory Council on Education, Occupational Education for Massachusetts, Report of the Advisory Committee on the Schaeffer-Kaufman Recommendations, April 1970, p. 23.

III. TAX INCIDENCE ON RESIDENTS OF CITY OF BOSTON OF PROPOSED SERVICES/FINANCING REALLOCATION

Introduction

Discussion in the preceding chapter developed the rationale for shifting the administration and/or financing of selected services from cities and towns in Massachusetts to the state government. For each service, the 1970 expenditures for the City of Boston, all other municipalities, and municipalities as a whole in the state were computed. In addition, estimates were made of service level changes that might be expected as a result of the shifts in administration/financing, and the impacts thereof on expenditures that these service changes implied.

This chapter outlines the fiscal consequences for residents of the City of Boston of the proposed service shifts. The fiscal implications fall out of three stages of the analysis: (1) the City of Boston would receive direct budget relief (property tax reduction) equivalent to the city's current expenditures for the shifted services; similar budget and property tax relief would be realized by all cities and towns in the Commonwealth; (2) the residents of cities and towns are also the taxpayers for state taxes. In the aggregate, residents of Boston (or of any municipality) would pay a different share of total state revenues to cover a given service than they do currently when their municipality finances the services through property taxes or when their municipality uses property tax revenues to pay their proportionate shares of assessments levied by metropolitan agencies such as the MDC or MBTA. Thus the aggregate amount of taxes paid by Boston residents for the given total of ex-

penditures for shifted services will be affected by the shift in financing. (3) Finally, within Boston (or any municipal jurisdiction) the taxes fall differentially on households, depending on household size and income level.

The remainder of this chapter is divided into two sections. First, the methodology for analyzing the tax impact on resident households is discussed; this includes setting up an income definition and examining the present burden of the local property tax and the state taxes which are potentially available for raising the additional state revenues required. The final section will estimate the change in family tax burdens caused by selecting various combinations of state taxes as substitutes for property tax financing.

A. ESTIMATION OF TAX BURDEN DISTRIBUTION²

There are three separate steps which must be taken in the analysis for estimating the tax burden distribution resulting from proposed shifts of the administration and/or financing of services from local to state government: (1) the development of an appropriate income distribution against which to allocate resultant tax liabilities; (2) clarification of the assumptions with respect to shifting of the taxes under consideration; and (3) preparation of an empirical series of tax payment and tax burden consequences by size of household and class of income.

The section below is a detailed analysis of the first step. The four following sections deal with steps (2) and (3) for the property, income, sales and gasoline taxes, respectively.

An Appropriate Income Distribution

In order to calculate the tax burden by income class it is

necessary to identify the number of family units in each income class. Although the Census of Population for 1970 might be considered a primary source for such data, intensive examination discloses serious gaps and errors in the information. Major deficiencies in the data include the omission of capital gains income and the understating of certain sources of income, particularly income from sources other than wages and salaries. In particular, the income statistics from the U. S. Census seem to under-report income, especially for taxpayers in the higher income brackets. The result of this for the analysis in this report would be to understate the degree of tax regressivity.

An elaborate procedure must be used to adjust the Census income distribution data, drawing on information from the U. S. Census, the U. S. Department of Commerce, and the U. S. Internal Revenue Service. The adjustment process may be summarized as follows: (1) Total capital gains income in the Boston Standard Metropolitan Statistical Area (SMSA) for the 1969 fiscal year was extracted from Internal Revenue Service data² and allocated across income classes in the Boston SMSA according to the national distribution of capital gains for income groups. (2) Data from the U. S. Department of Commerce made it possible to estimate that percentage of income under-reported in Census data for wages and salaries, property income, proprietors' income, and transfer payments, after adjustment of the data to a common area definition. Included in such data were such components as imputed rents and interest, and food stamps. (3) These two adjustments were applied to the reported Census income data for the SMSA and the City of Boston. The result was a new distribution which may

TABLE III - 1

DISTRIBUTION OF FAMILIES AMONG INCOME CLASSES IN CITY OF BOSTON
BY CENSUS AND ECONOMIC INCOME: 1969

Income Class	Number of Family Units*			
	By Census Income	As Percent Of Total	By Economic Income	As Percent Of Total
\$ 0- 999	31865	11.8	31206	11.6
1,000- 1,999	26995	10.0	4175	1.6
2,000- 2,999	22406	8.3	14892	5.5
3,000- 3,999	18791	7.0	16011	5.9
4,000- 4,999	17547	6.5	15015	5.6
5,000- 5,999	18469	6.9	15345	5.7
6,000- 6,999	17257	6.4	20677	7.7
7,000- 7,999	16614	6.2	22189	8.2
8,000- 8,999	15250	5.7	19468	7.2
9,000- 9,999	12879	4.8	17717	6.6
10,000-11,999	21325	7.9	27918	10.4
12,000-14,999	21135	7.9	24164	9.0
15,000-24,999	22938	8.5	26203	9.7
25,000 and over	5749	2.1	14204	5.3
Total	269220	100.0	269220	100.0

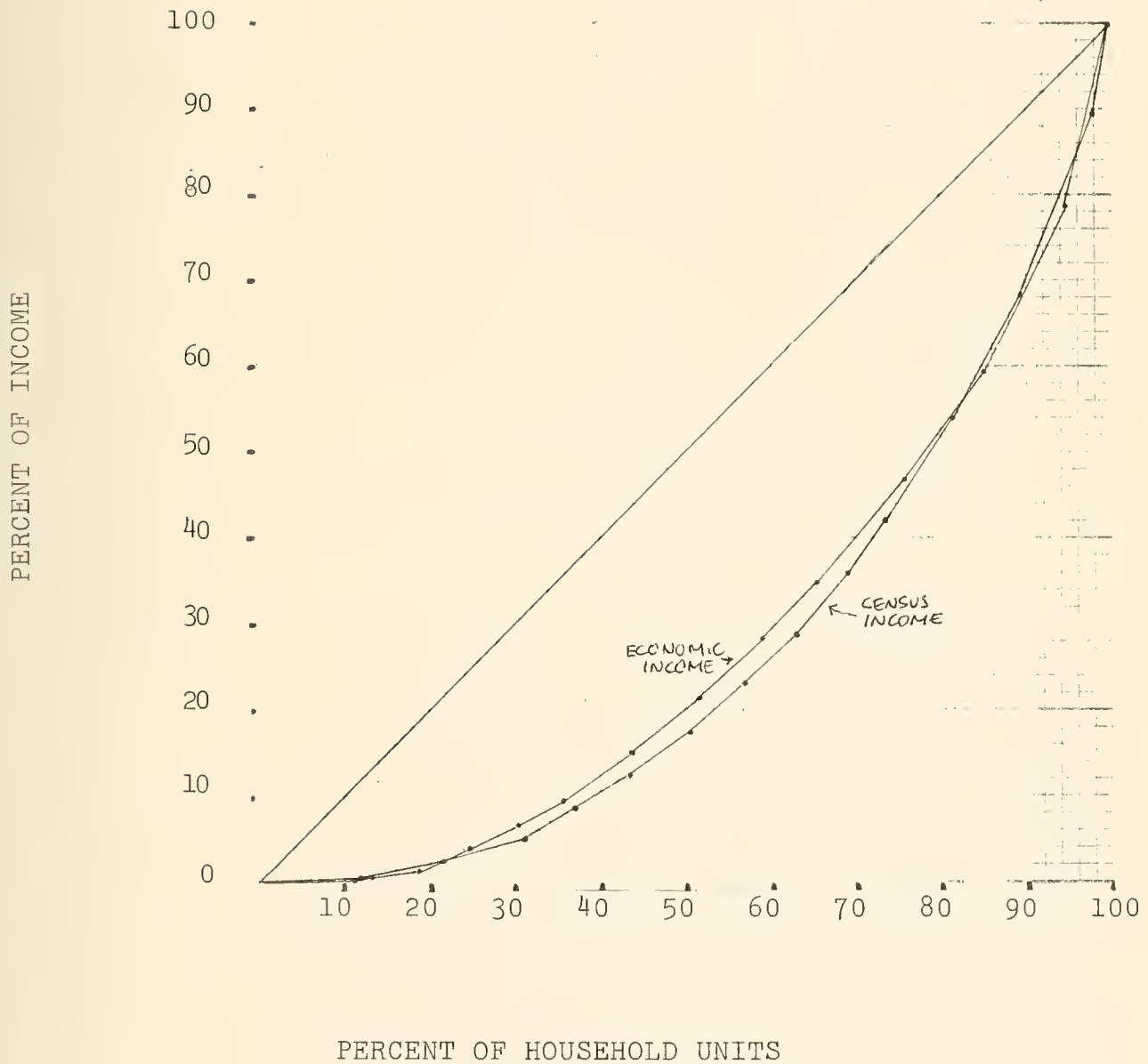
* Family units include families and unrelated individuals.

tributions for the City of Boston show a heavy concentration of family units in the lowest income class. This heavy concentration at the bottom is almost entirely unrelated individuals (27,303 out of the total of 31,206 family units), and probably reflects the heavy concentration of student population in Boston. This hypothesis is further reinforced by noting that the mean economic income in the lowest class is \$57, strong evidence that dissaving or external (e.g., non-resident family) support is present. In the tax incidence tables which follow, the burden of the lowest class appears to be particularly heavy because of this unusual concentration of household units and low mean income.

The Shifting Methodology

All of the municipal activities and expenditures recommended for shifting are presently financed out of the general revenues of the City of Boston and those of other cities and towns, about two-thirds of

FIGURE III - 1
LORENZ CURVE
CITY OF BOSTON, 1970



which consist of local property taxes. Hence the local tax decrease treated in the following discussion is always the property tax. All the public services in the analysis are treated as a package, except for the transportation functions chargeable to the motor fuel excise.

The four major taxes in Massachusetts are discussed in turn, including a description of the structure of each and the estimated local burdens. Two alternatives for shifting the functions to the state level are considered: (1) Some of the transportation costs (highway services) to be shifted would be financed out of the motor fuel excise tax and the remaining functions would be financed out of the State's General Fund, half through the income tax and half through the sales tax. (2) Transportation costs would be financed out of the motor fuel excise, the remaining services from the General Fund, entirely through an increase in the income tax.

Federal Tax Offsets

One issue which will not be treated in this analysis is tax exporting through federal tax offsets. When state and local taxes are deductible from income taxable by the federal government, the state or local tax liability is offset by a reduction in the federal tax liability. All the state and local taxes under analysis in this report (income, sales, gasoline and property) are deductible for both individuals and businesses in computing taxable income. However, several points must be made with respect to the distribution among taxpayers of such offsets. First, the deduction is available only to the statutory taxpayer, not necessarily the one who actually bears the final burden after shifting occurs. Thus in the case of property taxes on residential property, owners can claim the deduction but renters cannot, in spite of the fact that it is commonly claimed that

One-fourth of rent goes for taxes. Similarly, for property taxes on commercial property, the business owner deducts these taxes as a cost of doing business, but consumers can claim no deduction for their share of such offsets. Secondly, these tax deductions benefit only those who itemize their deductions. For the corporation income tax, all businesses itemize their schedule of expenses. For the personal income tax, it tends to be higher income taxpayers who itemize their deductions and receive credit for the offsets. Finally, federal tax offsets are based on a progressive rate structure and hence are regressive as between individuals since the actual tax amount saved depends on the tax brackets and applicable tax rates.

If federal offsets in the cases under discussion were accounted for, then the estimated property tax reductions and concomitant income, sales, or gasoline tax increase benefits would accrue to renters more than to owners and relatively more than the results indicate since the income, sales, and gasoline taxes are deductible for all groups while the property tax is not deductible for renters.

Local Property Taxes

The purpose of this stage of the analysis is to determine how much of the property tax is paid by Boston residents, characterized by income class and family size, both directly as consumers of housing and indirectly as consumers of goods and services or as (non-occupying) owners of property.

The first part of the analysis is the estimation of how the burden is divided as between different kinds of properties; then assumptions are made about who the final taxpayers are for each kind of property. Finally, the burden on each type of taxpayer is distributed across families (by family size and income class) and

Individuals (by income class), and aggregated across all types of taxpayers in order to get the total property tax burden.

According to the most recent available data,³ the distribution of gross assessed valuations for the City of Boston for major land use classifications is as follows:

Commercial and industrial	55.5%
Vacant lots	3.1
Non-farm residential	41.1
Single-family residential only	9.5

These proportions of total assessed valuations give approximate indications of the relative shares of total property taxes coming from each of these sources. Other sources outlined below may then be used to further divide this base property tax into its more detailed categories of land uses as shown in Table III-2.

The residential portion of the tax base has been divided into three parts because the Census of Housing reports housing consumption separately for owner-occupiers in single-unit structures, renters, and owner-occupiers in multi-unit structures. The Census of Housing reports that 85 percent of Boston's single-family units are owner-occupied. This figure is used to adjust the Census of Government's "single family" percent of base. The remaining 15 percent of the single-family unit category is included in the renter total, as is 83 percent of the multi-family category, since the Housing Census reports that fraction of multi-family units as renter-occupied. Finally, the remaining 17 percent of the units in multi-family structures are occupied by the owners of the structure. It should be noted that the above procedure assumes that for single-dwelling structures, rental and owner-occupied units have the same mean assessed

value. Similarly, it assumes that for units within multi-unit structures, the mean assessed value (per unit) is the same for owners and renters. These assumptions are implicit in the use of Housing Census data on number of units (regardless of value) to adjust the Census of Government's data on proportions of aggregated assessed valuations. For non-residential property the distribution among uses is derived from figures on acreage and employment in each use in the City of Boston. Table III-2 summarizes these results.

TABLE III - 2

DISTRIBUTION OF ASSESSED VALUATIONS IN CITY OF BOSTON
BY TYPE OF PROPERTY: 1970

		Percent of Total Assessed Value
		41.1
Residential		13.4
Owner-occupied units		
in single family structures	8.1 ¹	
in multi-family structures	5.3 ¹	
Renter-occupied units		27.7 ¹
		55.4
Non-Residential *		
Retail		27.7
Wholesale		7.7
Manufacturing		8.9
Finance, Insurance, Real Estate, and Business Services		11.1
Vacant Lots		3.1
Other		0.4

1. Derived from U.S. Housing Census and Census of Governments. See text.

*Sources: Derived by the following method from 1963 acreage and current payroll data: Of acreage used for all four types of activity in the City of Boston, the percentage of total in each use is as follows:
(1) Retail - 60%; (2) Wholesale - 14%; (3) Manufacturing - 16%; (4) Finance, Insurance, Real Estate (FIR) and Business Services - 10%. For establishments in Boston performing these functions, the percent of total payroll and percent of total employment, respectively, in each use is as follows:
(1) Retail - 36%, 41%; (2) Wholesale - 14%, 11%; (3) Manufacturing - 19%, 18%; (4) FIR and Business Services - 30%, 30%. For wholesale and manufacturing, the two measures agree fairly well. For retail and FIR they do not, and understandably so, since retail activities use land relatively extensively, in contrast to FIR and businesses, which tend to use land intensively. Since a reflection of taxable property values is desired, the two are averaged to obtain the result shown in the table. This approach ignores the possibility of significantly different assessment ratios for different uses.
Acreage data from Vogt, Ivers, and Associates, 1963 Comprehensive Land Use Inventory Report, Massachusetts. Employment and payroll data from Massachusetts Division of Employment Security, M.I.T. Urban Project tapes, 1970.

For both the direct (residential) and the indirect impact of property taxation, an assumption must be made about where the burden falls. The standard case adopted in most such discussions revolves around the theoretical proposition that taxes on land are borne by consumers of whatever goods and services are produced or sold on the land in the form of higher prices for these goods and services. Thus for residential property, some share of property taxes is borne by the occupiers and the rest is borne by the owners. For owner-occupied dwellings, the tenant bears part of the tax and the landlord the remainder. Dick Netzer suggests that for rental housing, 80 percent of taxes are passed on to tenants in rents and 20 percent are paid from the owner's profits.⁴ Although rent control in the City of Boston allows for a full pass-on to tenants of any tax increases (e.g., 100 percent shifting of the burden), it cannot be assumed that the same would hold true for a tax decrease: since rent control is imposed in a situation of excess demand, this situation makes possible (makes the market "able to bear") a pass-through of all tax increases but discourages a similar pass-through of tax decreases, and it is unlikely that rent control authorities could enforce a full reduction in rents if a tax decrease ensues. Therefore, the results shown in the tables that follow are based on an assumption of 80 percent shifting, but modifications in the results under the assumption of 100 percent shifting will also be discussed in the text.

For property taxes on non-residential property the assumptions about shifting depend upon use: businesses which operate in strictly local markets can pass more of the tax on to their consumers because other firms with which they compete are obligated for the same taxes. There are three potential final bearers of the burden: stockholders of Boston corporations, proprietors of Boston companies, and consumers of goods and services made and/or sold in Boston. The distribution across these three groups depends on assumptions about exporting of the burden to non-residents as well as the shifting assumptions.

Based on the division among uses shown in Table III-2, Dick Netzer's two shifting cases⁵ may be examined:

(1) Retail:

Case 1: 75% shifted to consumers, 25% borne by owners

Case 2: 100% shifted to consumers

(2) Wholesale:

75% shifted to consumers, 25% borne by owners

(3) Manufacturing:

Case 1: 50% shifted to consumers, 50% borne by owners

Case 2: 90% shifted to consumers, 10% borne by owners

(4) Finance, Insurance, Real Estate and Business Services:

75% shifted to consumers, 25% borne by owners

In Case 1, 39.3 percent of the total property tax burden is borne by consumers and 16.1 percent by owners of non-residential property. In Case 2, 49.8 percent is borne by consumers and 5.6 percent by owners. As with the residential cases, the case involving less shifting (case 1) will be incorporated in the subsequent tables, with both cases being discussed in the text.

Exporting is possible, both of the share of the tax passed on to consumers (through sales of goods and services to final consumers residing outside the City of Boston) and the share borne by owners (when non-Boston residents own proprietorships or corporate shares in Boston enterprises). Similarly, importing of taxes is possible if Boston residents buy goods produced or sold by firms subject to property taxation elsewhere or if Boston residents own enterprises subject to property taxation elsewhere. The context of this discussion is consideration of the situation in which certain public services will be shifted from cities and towns in Massachusetts to the state government, and as a consequence, that property taxes levied by all cities and towns would be affected. Therefore, it is important to look at the net exporting of property taxes from Boston, which is net importing of property taxes levied by other Massachusetts cities and towns. The objective is to determine the net effect on indirect and direct payment of property taxes by Boston residents of a statewide reduction in property taxes, expressed in terms of Boston's taxes. If total property tax payments by Boston residents to all Massachusetts municipalities are equal to r times total property taxes collected in Boston, then the fraction $(1 - r)$ is the net exporting rate. Exporting through consumers is discussed immediately below, followed by a discussion of exporting through owners.

Wholesale, finance, insurance, real estate and business services are generally carried on by large central cities serving the many smaller communities surrounding them. Hence it is assumed that there is no importing from other Massachusetts jurisdictions of taxes being passed on to consumers through wholesale, finance, insurance, real

of total manufacturing tons of Massachusetts are shipped less than 100 miles.⁸ The City of Boston produces one-seventh of the state's value-added in manufacturing; the SMSA produces almost one-half.⁹ Since the potential final market for manufacturing is wider than that for wholesaling, higher gross exporting may be expected. Because of some importing, however, an offset occurs. Thus 75 percent exporting of taxes passed on to manufacturing consumers is assumed.

Finally, for retail consumers it is anticipated that the importing aspect will be even stronger: Boston residents shop outside Boston as well as inside and hence pay (passed-on) property taxes to other jurisdictions in Massachusetts. As outlined in the preliminary discussion, the critical data item is \underline{r} , where \underline{r} is the ratio of property taxes paid by Boston residents as retail consumers to taxes paid in Boston by all purchasers of retail goods. If it is assumed that property taxes passed on are proportional to the price of the goods, then Boston residents pay in taxes on retail sales

$$t_{B B}^B + t_{N N}^B$$

where t_B is the tax rate in Boston, t_N the average tax rate in the rest of the state, R_B^B is retail purchases in Boston by Boston residents, R_N^B retail purchases by Boston residents from retailers in the rest of the state. Total taxes collected from consumers of retail goods sold in Boston are

$$t_B R_B^B + t_B R_B^N$$

where R_B^N is retail sales in Boston to non-Boston residents. Thus

$$r = (t_B R_B^B + t_N R_N^B) / (t_B (R_B^B + R_B^N))$$

with R_B defined as all retail sales in Boston ($=R_B^B + R_B^N$) and R^B as all retail purchases by Boston residents ($=R_B^B + R_N^B$).

Suppose Boston residents make the fraction \underline{c} of all Boston retail purchases, and that this represents the fraction \underline{d} of all retail purchases made by Boston residents. That is,

$$c = R_B^B / R_B \quad \text{and} \quad d = R_B^B / R^B$$

then \underline{r} can be expressed as

$$\begin{aligned} r &= (t_B R_B^B + t_N R_N^B) / t_B (R_B^B + R_B^N) \\ &= R_B^B / R_B + (t_N / t_B) * (R_N^B / R_B) \\ &= c + (t_N / t_B) ((R^B - R_B^B) / R_B) \\ &= c + (t_N / t_B) ((c/d) - c) \\ &= c + (t_N / t_B) c (1 - d)/d \end{aligned}$$

and this formulation may be used to estimate \underline{r} .

Based on data for total property tax levies by cities and towns (and special districts) in Massachusetts in 1970 and similar data on total 1970 equalized values in each city and town (from "Financial Statistics of Massachusetts," 1971), an estimate may be derived of an average t_N (=total non-Boston tax levies/total non-Boston equalized value) to compare with t_B (= total Boston tax levy/total Boston equalized value). These are .05226 and .12701 respectively, which gives $t_N / t_B = .4115$.

Similarly, $c/d = R^B / R_B$ may be estimated by analysis of retail sales figures. The M.I.T. Urban Project has estimated retail purchases by residents of jurisdictions as a function of population and median family income, assuming, as a rough approximation, that for

the Boston SMSA as a whole retail sales in the SMSA are equal to retail purchases by the SMSA's residents. Using the M.I.T. estimates of retail purchases by Boston residents (R^B) and comparing this with published data on retail sales in Boston (R_B), $c/d = .62$. That is, Boston residents purchase (inside or outside the city) an amount just over sixty percent of retail sales in the city.

These two calculations permit placing a limitation on the possible values of \underline{r} . \underline{r} 's maximum value is .62, which is the case when $d = 1$, i.e., all retail purchases by Boston residents are made within Boston. If d is .9, \underline{r} falls to .59; exporting $(1 - r)$ rises to .41.

Because residents of the City of Boston in fact probably do most of their retail shopping in Boston, we shall assume a 40 percent exporting rate for property taxes passed on to consumers by Boston retailers.

In summary, the net burden on Boston residents as consumers is calculated to be 17.5 percent of property taxes in case 1 and 22.5 percent in case 2; non-residents of Boston as consumers pay 22 percent and 27 percent respectively of Boston property taxes in the two cases.

In the following discussion of exporting of taxes borne by owners, it is important to distinguish two kinds of owners--corporate and non-corporate. The distribution of dividends may be used as a proxy for the former, and proprietorship income to measure the latter.

Charles E. McLure, Jr. suggests that the corporate income tax is borne by profits in the short run, and on this assumption concludes that Massachusetts exports 73 percent of its corporate income tax in the short run.¹⁰ This implies that 73 percent of the owners of Massachusetts corporations live outside Massachusetts and the figure

can thus be used for property taxes borne by corporate owners (out of profits). It will be adjusted upward, as discussed below, to reflect the position of Boston residents relative to the rest of the state.

For property taxes borne by non-corporate landowners, much less exporting out-of-state may be anticipated since local ownership is more prevalent. Exporting within the state is calculated on the basis of property ownership in Boston relative to the rest of the state, as indicated below. An initial step, however, is to make the division between corporate and non-corporate ownership for each of the four non-residential sectors, and for owners of rental residential units and vacant land.

For the share of residential property taxes borne by the owners of renter-occupied buildings, the division as between corporate and non-corporate ownership in Boston is assumed to be the same as the national corporate vs. non-corporate shares of "total receipts" for the sector within finance, insurance and real estate called "operators and lessors of buildings." IRS¹¹ shows this sector as 37 percent corporate and 63 percent non-corporate. For vacant land, similar IRS national data for the sector -- "lessors of real property, other than buildings"-- are used; this sector is 19.1 percent corporate and 80.9 percent non-corporate.

For non-residential properties, there are two questions to answer if it is assumed that taxes are borne by the owners of the land:

(1) how much of the sector is corporate vs. non-corporate, and (2) do corporate and non-corporate establishments in each sector rent or own their property, and if they rent, do they rent from corporate or non-

corporate lessors? These two questions can be reduced to the first alone if one of the following conditions prevails: (a) owners of commercial property pass all taxes on to the establishments which actually use the property, or (b) lessors of property to each sector have the same corporate/non-corporate split as the operators of the establishments in the sectors, or corporate lessees lease from corporate owners, non-corporate from non-corporate lessors. Because this question has been consistently ignored in studies of this type, it will also be omitted from this analysis on the grounds that one or another of the parts of (b) is a fairly close approximation for Boston.

On the basis of IRS figures for Massachusetts¹² on shares of total net income or profits, the proportion of each sector which is corporate can be estimated, assuming that Boston is not significantly different in this regard from the state as a whole:

Retail: 54% corporate

Wholesale: 81% corporate

Manufacturing: 98% corporate

Finance, Insurance, Real Estate and Business Services: 94% corporate

The net exporting figure for Boston for property owners (corporate and non-corporate) is estimated in a way similar to the procedure described above for retail activities. In the retail sales discussion, R with subscripts and superscripts refers to retail sales; P may now be used to refer to property, with the subscript reflecting the location of the property and the superscript reflecting the place of residence of the owner. If Boston residents own the fraction c of Boston non-residential property, and this represents the fraction d of all non-

residential property owned by Boston residents, the result, as before, is

$$t_B P_B^B + t_N P_N^B = r t_B (P_B^B + P_B^N)$$

Boston residents, as owners of commercial property, pay the equivalent of r times the total commercial property tax burden borne by owners of Boston's non-residential property. The following equations are derived from this formulation.

$$r = (t_B P_B^B + t_N P_N^B) / t_B (P_B^B + P_B^N) = P_B^B / P_B^B + (t_N / t_B) (P_N^B / P_B^B)$$

$$r = c + (t_N / t_B) (1 - d) c / d$$

Under the previous calculation, $t_N / t_B = .4115$, and c/d is estimated as follows: From figures of the Bureau of Local Taxation, Massachusetts Department of Corporations and Taxation, the percent of total equalized value in various use categories is used as the basis for calculating the total equalized property value of commercial and industrial property in Boston and in the SMSA. (Because of data constraints, Boston relative to the SMSA is the framework of analysis rather than Boston relative to the state.) Census data on income by source for the SMSA and for Boston were used to calculate total property and proprietorship income (using methodology outlined by the Syracuse University Metropolitan and Regional Research Center (see footnote 2) for refining "other income" to "property income"). The property value data reflect the location of property; the income data, the residence of property owners. If, for the SMSA as a whole, SMSA residents own property equal to that located in the SMSA area, then

$$c/d = \frac{\text{Boston income}}{\text{Boston value}} \div \frac{\text{SMSA income}}{\text{SMSA value}}$$

From this assumption, $c/d = .8901$. This gives $r = .89$ as an upper

TABLE III - 3

PROPORTION OF CITY OF BOSTON PROPERTY TAXES PAID BY CITY OF
BOSTON RESIDENTS: 1970

	Total Taxes from This Source (1)	Share of Source Total Borne by Residents*		Taxes Borne by Residents		
		Case 1 (2)	Case 2 (3)	Case 1 (1) x (2) (4)	Case 2 (1) x (3) (5)	As % of Total Taxes (3)
				As % of Total Taxes		
Property Tax Sources						
Taxes on residential property	\$104,207,242	94.1%	100%	\$ 98,059,000	\$104,207,000	41.1%
Taxes on non-resi- dential property						
Retail	70,232,100	56.7	59.9	39,822,000	42,069,000	16.6
Wholesale	19,523,000	26.0	26.0	5,076,000	5,076,000	2.0
Manufacturing	22,565,600	23.6	24.7	5,325,000	5,574,000	2.2
Finance, Insurance, Real Estate and Business Service	28,143,600	28.8	28.8	8,105,000	8,105,000	3.2
Taxes on vacant land	7,859,900	64.5	64.5	5,070,000	5,070,000	2.0
Taxes on other property	1,014,200					
Total Property Taxes	\$253,545,600			\$161,457,000	\$170,101,000	67.1

*Residents bear taxes as consumers and/as owners (corporate and non-corporate).

Source: Table A-2, and City of Boston and County of Suffolk, Annual Report,
Auditing Department for the year 1970.

limit if all the property owned by Boston residents were located in Boston ($d = 1$). Since ownership is expected to be more dispersed than retail purchasing, the assumption becomes $d = 3/4$ and $r = .76$. This means that net exporting due to in-state, out-of-Boston ownership of land (or enterprise) is 24 percent. For corporate ownership the r result of .76 is multiplied by McLure's residual in the state of 27 percent. The results are a 21 percent remaining burden for the city residents leaving 79 percent exported from the city. For non-corporate enterprise, the 24 percent exporting figure is used.

This leaves a net burden of property taxes borne by Boston residents as corporate owners of property of 3.1 percent of taxes in case 1 and 1.2 percent in case 2; and the burden of Boston residents as non-corporate owners of property becomes 7.5 percent of property taxes in case 1, and 2.3 percent in case 2.

The results of this section are summarized in Table III-3 and in the Appendix Tables A-1 and A-2.

The preceding discussion of shifting and exporting for both residential and non-residential property would not be complete without making reference to more recent contributions to the literature of property tax incidence which challenge Netzer's "standard" cases. Larry Orr¹³ suggests that whereas Netzer's "cases" may be appropriate for an analysis of taxes falling on all property, they can hardly be applied to a metropolitan area where there is a great diversity in effective property tax rates. Owners of property in different jurisdictions within the economically interdependent area must compete with each other in attracting consumers and therefore find it impossible to pass on more of the tax than is common to

all jurisdictions in the area. The entire differential must be borne by owners, he claims, and supports his position with empirical research on cities and towns in the Boston metropolitan area. In 1970 the difference between Boston's effective tax rate and the lowest tax rate in the Boston SMSA (containing 78 cities and towns) is 78 percent of Boston's rate. Thus under Orr's hypothesis, owners would be expected to bear at least 78 percent of the property tax, the remaining 22 percent being split between owners and consumers, following Netzer's conclusion. Clearly, a major result of this, in terms of the final burden, is to suggest a higher overall exporting rate, since ownership is more geographically dispersed in general than is consumption. More specifically, for residential property 17.6 percent of the tax on rental units would be borne by the tenants and the rest by the owners. Owner-occupied units, of course, are unaffected by the change in assumptions. For non-residential property, the shifting percentages would be as follows (Netzer's Case 1 applied to Orr's unshifted remainder):

Retail: 16.5% borne by consumers, 83.5% by owners

Wholesale: 16.5% borne by consumers, 83.5% by owners

Manufacturing: 11.0% borne by consumers, 89% by owners

Finance, Insurance and Real Estate: 16.5% borne by consumers,
83.5% by owners

If the exporting analysis is based on these shifting assumptions, the overall exporting rate becomes 46 percent, compared to the 36 percent rate from Netzer's Case 1. See Table A-3 for a summary of the Orr case comparable to that for the two "standard" cases.

Another recent proposition in property tax incidence theory has been put forth by Peter Mieszkowski.¹⁴ He suggests that the basic effect of the imposition of property taxes is to decrease the yield of reproducible capital in general. This argument can only be applied to the nationwide average of property tax rates: relatively high tax rates in some cities and towns will have "excise tax effects" superimposed on the basic effect; they will raise prices of goods and services produced and/or sold in the community, and/or reduce returns to factors of production (land, labor). The average level of tax does not increase the price of housing services: the price of rental housing is not increased, and owner-occupiers pay the tax only in their role of owners of capital -- the opportunity cost of capital has fallen. For the purposes of this report, however, only the "excise tax" effects in Mieszkowski's analysis are relevant, which are comparable to the Netzer approach already discussed. The reason for this is that although capital in general may bear part of the tax, capital's burden will not be affected by the shift proposed in this study, which is designed to reduce property taxes statewide in Massachusetts. In 1969 the Massachusetts average effective property tax rate was the third highest in the U. S., and 1.6 times the mean effective tax rate for the entire nation.¹⁵ (On the basis of more recent data the estimate is that the Massachusetts average property tax rate is now the highest of all the states.) Thus it is highly unlikely that a statewide reduction will either put Massachusetts below the mean (turning the "excise tax effects" negative), or appreciably affect the mean; therefore, the burden on capital is

constant. Since the objective of this study is to trace the change in incidence resulting from the services financing shift, it is not useful to look at the total burden as Mieszkowski allocates it, since the decrease for each cell in the matrix will not be proportional to that total burden. Orr's analysis, on the other hand, refers to the effects of the interlocal differential part of the tax in a way different from Netzer's, and hence is an alternative which is pertinent to this analysis. Both the relative differentials and the common lowest level will be affected by the proposed statewide reduction in property taxes so that the change in burden on each cell may be roughly proportional to the total. The implications of the Orr case for the results of this study will be discussed where appropriate in the rest of this chapter.

The previous sections estimated the shares of the Boston property taxes borne by Boston residents in their various roles: as consumers of housing services, consumers of goods and (non-housing) services produced and/or sold in Boston, owners of corporate or non-corporate Boston enterprise. It now remains to distribute these calculated shares over the taxpayers in each role according to family size and economic income class. Housing consumption is discussed immediately below, followed by a discussion of the incidence of the non-residential burden.

Because the U.S. Census of Government's figures used as the basis for allocating the property tax base are in percentages of assessed value, the different assessment ratios as between the groupings is of no concern. In the following discussion a constant assessment ratio is assumed for all single-family, owner-occupied units, a constant (not necessarily the same constant) assessment ratio for

all renter-occupied units, and a constant assessment ratio for all owner-occupied units in multi-unit structures. This permits the treatment of taxes as proportional to value (or rent), as reported in the U. S. Census of Housing.

The basic methodology used to estimate housing consumption by families classified by household size and income class is the same for single-family owner-occupied units and renter-occupied units, because the data provided by the Census of Housing is similar for each of them. Although the discussion which follows is in terms of rents, the word "value" may simply be substituted wherever "rent" appears, in order to make the discussion applicable to owner-occupied units in single-unit structures.

The aim of the procedure outlined below is to calculate the mean rent paid by households in each household size by income class cell within the economic income matrix previously developed. Taxes can then be distributed throughout the cells in proportion to the mean housing expenditures so calculated.

The Census of Housing (Metropolitan Housing Characteristics) provides three two-dimensional matrices:

1. Count of households by rent by income¹⁶
2. Count of households by rent by household size¹⁶
3. Count of households by income by household size¹⁷

These three sets of data were used to construct a three-dimensional matrix of count of households by rent, by income, and by household size. Calculations were made of the aggregate rent paid by each income class by household size cell (multiplying the mean rent in each rent class by the number of households in the rent class and summing across

rent classes); and from that, the mean rent for each cell, the output desired. The three matrices were combined as follows: First, the matrices were adjusted to reflect the same row and column totals (this was necessary because income and household size data are collected for more households than is rent (or especially value) data. Then the three-dimensional matrix was approximated by taking the rent by income matrix and assuming that, given income, rent is independent of household size; that is, the number of households in the $(i,j)^{th}$ (income class, rent class) cell was multiplied by the fraction of all households in the i^{th} income class with household size k , in order to get the number of households in income class i , rent class j , and household size k . Finally, through iteration, by multiplying rows and columns, this matrix was adjusted so that the sum through any one dimension yielded a matrix identical to one of the three original two-dimensional matrices.

This process, applied to housing rents and values, generated matrices of housing consumption (aggregate and mean rent, aggregate and mean value) for renters and for owner-occupiers of single-unit structures, by income class and household size. The share of total property taxes falling on each of these two groups (see Tables III-2 and III-3) was then distributed in proportion to housing consumption.

An approach different from that outlined above is necessary for taxes falling on owner-occupied units in multi-unit structures because the Census collects no data on the value of these units. The number of households by income class and household size which fall into this category can be derived by a subtractive process: the total matrix (3) mentioned in the previous section minus that derived for single-unit owner-occupiers. Two alternative assumptions were

used to secure housing consumption figures for these households:

(1) that owner-occupiers of units in multi-unit structures who are members of the (i,k) cell (income class, household size) consume housing proportional to housing consumption of single-unit owner-occupiers of the (i,k) cell;

(2) that owner-occupiers of units in multi-unit structures who are members of the (i,k) cell consume housing proportional to housing consumption of renters of the (i,k) cell.

In terms of real or economic income not reflected in census income figures (especially imputed rents), owner-occupied households in multi-unit structures are more like single-unit owner-occupiers than renters; thus the first assumption was used in the tabular results. Taxes borne by owner-occupiers in multi-unit structures (see Tables III-2 and III-3) were distributed in proportion to housing consumption so derived.

The residential property tax burdens on the three groups, derived above, are combined to give the aggregate residential tax burden for all the city's households, by income class and household size. The mean residential tax for each cell is then simply the aggregate divided by the total number of households in the cell.

The final stage in the residential analysis is to convert the above results in terms of census income into "economic income" results. This is done by deflating the economic income matrix using calculated under-reporting percentages in order to determine what census income categories it corresponds to, and then applying the appropriate mean tax results to the economic income categories. The final result of these computations, indicating the burden of property taxes on Boston

is shown in Tables III-4A and III-4B.

TABLE III - 4A

PROPERTY TAX PAYMENTS BY RESIDENTS
OF CITY OF BOSTON BY INCOME CLASS
AS CONSUMERS OF HOUSING SERVICES, 1970

<u>Economic Income Class</u>	<u>Tax Payments (thousands of dollars)</u>	<u>Mean Tax Payments</u>
\$ 0- 999	\$ 8540.62	\$273.68
1,000- 1,999	1135.50	271.97
2,000- 2,999	4080.76	274.02
3,000- 3,999	4219.76	263.55
4,000- 4,999	3820.80	254.47
5,000- 5,999	4315.44	281.23
6,000- 6,999	5994.32	289.90
7,000- 7,999	6794.04	306.19
8,000- 8,999	6226.29	319.82
9,000- 9,999	6101.73	344.41
10,000-11,999	9882.82	353.99
12,000-14,999	9590.37	396.89
15,000-24,999	11865.89	452.85
25,000+	7693.06	540.24
Total	\$90261.38	

The 1960-61 Bureau of Labor Statistics (BLS) survey showing consumer expenditures by income class and family size for urban areas in the northeast was used to distribute taxes passed on to consumers. The BLS survey data were adjusted using the Boston consumer price index (1970/1960) to reflect real income; that is, it was assumed that consumption patterns today as a function of constant dollar (purchasing power) income are the same as they were in 1960-61. This series was then adjusted to fit the "economic income" categories in a manner similar to housing consumption discussed above.

Taxes borne by corporate owners are distributed according to the "property income" component of the economic income matrix; taxes borne by non-corporate owners, according to "proprietorship income" in the economic income matrix for families and unrelated individuals in the City of Boston.

Table III-5 exhibits the burden of property taxes falling on

TABLE III - 4B

PROPERTY TAX PAYMENTS BY RESIDENTS OF CITY OF BOSTON BY INCOME
CLASS AND FAMILY SIZE
AS CONSUMERS OF HOUSING SERVICES, 1970

(thousands of dollars)

Tax Payments By Family Size

Economic Income Class	Unrelated					
	Individuals	2	3	4	5	6 or More
\$ 0- 999	\$ 7351.87	\$ 566.85	\$ 240.10	\$ 172.40	\$ 90.26	\$ 119.15
1,000- 1,999	1047.95	54.16	13.54	9.03	5.42	5.42
2,000- 2,999	3525.65	377.30	91.16	44.23	22.57	19.86
3,000- 3,999	3287.35	562.33	150.74	104.70	57.77	56.87
4,000- 4,999	2721.41	654.40	186.84	106.51	69.50	82.14
5,000- 5,999	2527.35	974.83	331.26	216.63	121.85	143.52
6,000- 6,999	3663.75	1145.43	457.63	339.39	174.21	213.92
7,000- 7,999	3032.81	1648.19	786.19	643.57	356.54	326.75
8,000- 8,999	2252.95	1411.70	847.56	742.86	469.36	501.86
9,000- 9,999	1633.75	1552.51	952.27	850.27	545.18	567.75
10,000-11,999	1854.89	2398.27	1677.07	1620.21	1111.13	1221.25
12,000-14,999	1075.93	2448.82	1802.54	1726.72	1197.78	1338.59
15,000-24,999	935.12	2417.23	2391.05	2400.98	1728.52	1992.99
25,000+	939.63	1548.00	1284.43	1503.77	1151.75	1265.48
Totals	\$35850.32	\$17760.02	\$11212.39	\$10481.26	\$7101.84	\$7855.53

Boston residents indirectly, i.e. as owners of any property (except residential owner-occupiers), and consumers of goods and (non-housing) services. Table III-6 shows the total burden of property taxes on residents of the City of Boston, the direct and indirect burdens combined.

Application of Netzer's Case 2, which has greater shifting to consumers than the assumptions reflected in the tables, would show higher totals in Table III-4A and Table III-4B (especially in the lower income ranges, since it is renter taxes which are added) and generally lower totals in Table III-5 (especially in the upper income ranges). If greater shifting were assumed, Table III-6 would show a higher total tax borne by Boston residents (because of less net exporting), the increased burden being picked up mostly by groups below the top income classes; the very highest class would actually pay absolutely lower taxes than when less shifting is assumed.

Under the Orr hypothesis, in which capital bears much more of the tax, the totals in Table III-4A and Table III-4B would be about one-half lower than those shown; in Table III-5, about one-fourth higher than those shown, with more of the tax in Table III-5 appearing in the upper income range (owners) than the lower (consumers). The overall property tax borne by Boston residents (Table III-6) would be about one-sixth less than that shown, with the burden also shifting from lower to higher income residents (e.g., the lowest two income classes would pay half what is shown in the table, while the highest class would pay more taxes).

The Mieszkowski proposition applies to the overall present distribution of the burden, although it is not applicable to any

TABLE III - 5

PROPERTY TAX PAYMENTS BY RESIDENTS OF CITY OF BOSTON BY INCOME CLASS
AND FAMILY SIZE
FOR NONRESIDENTIAL PROPERTY OR OWNERSHIP OF RENTAL RESIDENTIAL PROPERTY, 1970.

(Thousands of dollars)

Tax Payments By Family Size

Economic Income Class	Unrelated Individuals						Mean Tax Payment by Income Class
	1	2	3	4	5	6 or More	
0- 999	\$ 54.62	\$ 7.94	\$ 1.93	\$ 1.41	\$ 0.52	\$ 1.41	\$ 2.17
1,000- 1,999	234.86	21.94	2.57	1.41	0.97	1.41	63.03
2,000- 2,999	984.62	141.66	18.02	9.01	4.77	7.35	78.26
3,000- 3,999	1172.12	152.12	39.29	25.95	16.69	23.35	89.28
4,000- 4,999	1343.10	234.46	65.02	38.97	27.47	35.88	116.21
5,000- 5,999	1443.83	421.01	142.82	114.12	65.05	70.06	147.08
6,000- 6,999	2402.79	600.29	253.89	229.91	118.61	134.65	180.88
7,000- 7,999	2077.73	1007.04	566.26	492.01	293.82	249.43	211.20
8,000- 8,999	1596.43	960.72	660.61	596.79	419.00	426.05	239.35
9,000- 9,999	1215.70	1057.17	734.98	679.48	466.35	477.16	261.39
10,000-11,999	1410.88	1782.94	1402.45	1425.69	989.38	1142.57	292.07
12,000-14,999	831.15	2092.09	1589.75	1562.91	1136.52	1328.35	353.46
15,000-24,999	867.85	2545.81	2559.43	2657.73	2101.25	2381.75	500.47
25,000+	1984.00	3262.89	2512.97	3245.42	2769.26	3019.75	1179.36
Totals	\$17619.68	\$14288.07	\$10549.98	\$1080.81	\$8409.66	\$9299.17	

TABLE III - 6

TOTAL PROPERTY TAX PAYMENTS
BY RESIDENTS OF CITY OF BOSTON BY INCOME CLASS AND FAMILY SIZE, 1970

(thousands of dollars)
Tax Payments By Family Size

Economic Income Class	Unrelated Individuals						Mean Tax Payment by Income Class
	2	3	4	6	6 or More		
0- 999	\$ 7406.48	\$ 574.78	\$ 242.03	\$ 173.81	\$ 90.78	\$ 120.56	\$ 275.86
1,000- 1,999	1282.80	76.10	16.11	10.44	6.38	6.83	335.00
2,000- 2,999	4510.27	518.95	109.19	53.24	27.33	27.21	352.27
3,000- 3,999	4459.47	714.46	190.02	130.66	74.46	80.21	352.83
4,000- 4,999	4064.51	888.86	251.86	145.48	96.98	118.02	370.68
5,000- 5,999	3971.17	1395.84	474.08	330.75	186.90	213.58	428.30
6,000- 6,999	6066.54	1745.72	711.52	569.30	292.81	348.57	470.79
7,000- 7,999	5110.54	2655.23	1352.44	1135.57	650.35	576.18	517.39
8,000- 8,999	3849.38	2372.42	1508.17	1339.64	888.36	927.91	559.17
9,000- 9,999	2849.45	2609.68	1687.24	1529.75	1011.54	1044.91	605.80
10,000-11,999	3265.78	4181.91	3079.53	3045.90	2100.51	2363.81	646.06
12,000-14,999	1907.07	4540.91	3392.29	3289.63	2334.30	2666.94	750.35
15,000-24,999	1802.96	4963.04	4950.48	5058.71	3829.78	4374.75	953.32
25,000+	2923.63	4810.88	3797.40	4749.18	3921.01	4285.22	1719.60
Totals	\$53470.05	\$32048.05	\$21762.35	\$21562.06	\$15511.49	\$17154.69	

analysis of shifting service financing to the state; that is, the burden reduction, in the event of the shift, is not proportional to the present total burden. (For the Netzer and Orr cases, this proportionality has been assumed.) Since Boston's property tax rate is 3.5 times the U. S. average,¹⁸ 29 percent of the Boston property tax is borne solely as a reduction in the rate of return to capital. The remainder has "excise tax effects" and may be borne by consumers of services or have the effect of reducing returns to factors of production (capital, labor or land). Thus its results would seem to be somewhere between the standard case and the Orr case discussed above.

Personal Income Tax

The Massachusetts personal income tax provides the largest single source of revenue for the state's general fund. If the state assumes financial responsibility for the package of municipal services as proposed, then much of the state's additional revenue requirements generated by those recommendations is likely to be met through increases in the personal income tax. This section of the analysis will estimate how the burden of increased state income taxes will fall on City of Boston residents.

This calculation will be made in the following way: First, average state income tax payment for each classification of family unit (i.e., each cell in the economic income class by family size matrix) is estimated. The matrix of average tax payments is then used to sum up (by multiplying by the number of units in each cell) the total income tax payments in Boston and determine the proportion of this total that each cell of the economic income by family size matrix pays. Then an estimate is made of the proportion of total

state income tax revenues that are collected in Boston. With the proportion of state income tax collected in Boston and the proportion of Boston income tax collections paid by each type of family unit, the percentage contribution to the total state collections of each Boston family unit can be estimated. These individual percentage contributions to present income tax revenues are subsequently applied to the additional amount of income tax revenue required to finance local services recommended for shifting to the state. This, in effect, assumes that any individual tax-paying unit will pay the same proportion of the additional required state revenues that he or she pays of present state tax collections. The implication of this is that the tax rate structure will not be changed but that a surcharge will be levied on current tax bills sufficient to produce the needed revenues.

The remainder of this section discusses in greater detail the above procedure, citing the sources of data used and the assumptions and limitations implicit in the calculations. The current Massachusetts state income tax consists of a five percent flat-rate levy on earned income, and a nine percent flat rate levy on unearned income.¹⁹ Earned income includes wages, salaries, net rental income and savings bank interest. Capital gains, dividends and particular kinds of interest comprise unearned income. Personal exemptions are \$2,000 for an individual or the first family member and \$600 for each additional family member. An individual is exempt from any income taxation if he or she makes less than \$3,000, and a family with income under \$5,000 pays no taxes. The full amount of capital gains is taxable in Massachusetts in contrast to federal laws which permit 50 percent of net capital gains income to be deducted from taxable

income. The two flat rates, the personal exemptions and other deduction provisions create an effective tax rate structure that is more progressive than a single flat rate system.

Edward Moscovitch calculated the average tax rate for each of various income classes. The average number of exemptions, the average proportion of income derived from capital gains and dividends served as the basis for deriving the average tax rates for each income bracket.²⁰ These rates are shown in Table III-7.

TABLE III - 7
ESTIMATE OF MASSACHUSETTS INCOME TAX RATES, 1970

<u>Income Bracket</u>		<u>Tax Rate as Percentage of Taxable Income</u>
\$	0- 800	0%
	800- 1,300	0
	1,300- 2,600	0
	2,600- 4,000	0
	4,000- 5,300	0
	5,300- 6,600	2.6
	6,600- 8,000	2.7
	8,000- 9,300	2.9
	9,300- 10,600	2.9
	10,600- 12,000	3.1
	12,000- 13,000	3.3
	13,000- 20,000	3.7
	20,000- 26,000	4.1
	26,000- 33,000	4.5
	33,000- 40,000	4.7
	40,000- 66,000	5.1
	66,000- 130,000	5.6
	130,000- 300,000	6.3
	300,000- 700,000	7.1
	700,000-2,000,000	7.5
	2,000,000 or more	7.8

Source: Moscovitch, op.cit. Table III-3.

The method by which the average tax payments of Boston residents are calculated is to multiply these rates by the average taxable income for each cell of the matrix displaying the economic income by family size. Because Moscovitch uses statewide IRS data to calculate his rates, an assumption is involved in applying these rates to Boston. More precisely, it is assumed that the distribution with respect to income class of the average number of exemptions, income claimed in deductions and unearned income is the same for Boston as it is for the whole state.

To calculate the average tax payments within an economic income class, these rates are applied to the average taxable income corresponding to each economic income class. The most relevant data source for taxable income is the Internal Revenue Service reports of personal income tax returns, which give average adjusted gross income. However, adjusted gross income cannot be used for this purpose for two reasons: (1) It is reported for the City of Boston for only five income classes, as contrasted with the fourteen income classes of economic income. (2) Economic income is generated from census income as its basic data source, and therefore, one can go back and forth from census income to economic income by using the under-reporting percentages. One cannot go back and forth from adjusted gross income to economic income. Therefore, to secure taxable income, a deflation of economic income back to census income is used, capital gains are added, and transfer income is deleted.

Adjusted gross income and census income in terms of distribution and total amount are quite similar for Boston. The two income measures

are similar in concept. Two differences, however, are that adjusted gross income includes one half the amount of net capital gains while census income excludes the reporting of capital gains, and census income contains transfer income while adjusted gross income does not. A comparison of average census income and average adjusted gross income per return as well as the total of each for the City of Boston appears in Table III-8.

TABLE III - 8

COMPARISON OF CENSUS INCOME AND ADJUSTED GROSS INCOME (AGI) 1969

<u>Income Class (thousand dollars)</u>	<u>Average Census Income</u>	<u>Average AGI per Return</u>
\$ 0 - 3	\$ 1,214	\$ 1,454
3 - 5	3,964	4,010
5 - 10	7,284	7,259
10 - 15	12,073	12,059
15 +	21,792	30,645
Total Income	\$1,972,754,000	\$2,022,251,000

Source: U. S. Census of Population, Federal Individual Income Tax Return Data for Each Five Digit Zip Code Area in Massachusetts: 1969, IRS, May, 1972.

For each economic income class, the following calculation is made to determine the mean taxable income corresponding to that class: Within each economic income class, the income is broken down into sources, and these sources are deflated by using the under-reporting percentages developed above. Capital gains are then added and transfer income is deleted. Finally, this total is divided by the number of units in the economic income class to get a mean taxable income figure. The Moscovitch tax rates are applied to this mean taxable income to get the mean state income tax payments. The mean tax bill corresponds to the family-of-four category within each economic income class, because the mean family size throughout the taxable income range (family income above \$5,000) is four members.²¹ To adjust the tax payment for other family sizes, \$30 (equivalent to the earned income tax rate of five percent multiplied by \$600, the exemption for each family member) is subtracted or added from the tax bill for each additional or fewer family member.

For unrelated individuals (corresponding to a family size of one) some additional calculations are made. The exemption structure for individuals is basically the same, so that \$30 is added to the tax bill above what a family of two in the same economic income class pays. However, the average capital gains income for families and for individuals in any particular income class differs. Therefore, to correct for this, four percent is multiplied by the difference between capital gains income of individuals and of families and this product is added to the tax bill of the unrelated individual. The four percent figure is

used because while the extra capital gains income is being taxed at nine percent, it is displacing in the mean income of that class some earned income taxed at five percent. Therefore, the net additional tax is four percent of the extra unearned income. For some categories in the middle income ranges, individuals made less capital gains income than families so that a negative amount is added to the tax bill of individuals in that category. In the case of the \$5,000 - \$6,000 and the \$6,000 - \$7,000 economic income categories where no family tax rate is applicable (because the corresponding taxable income is below the \$5,000 zero tax level), the tax was estimated by taking five percent of the deflated earned income sources (wages, salaries, and proprietary) and nine percent of the unearned income sources (property and capital gains).

To estimate the proportion of state income tax revenues collected in the City of Boston, the ratio of federal income tax collected in Boston to federal income tax collected in Massachusetts is used. Despite the difference in exemptions and unearned income rate as between state and federal income taxes, the structure of tax rates (not actual rate levels) with respect to income is similar for Massachusetts and for the federal income tax.²² Therefore, it is assumed that the proportion of Boston collections relative to state collections is the same for the two taxes. The total federal collections in Boston is determined by totalling for all the zip codes in Boston the IRS data provided by zip code.²³ The total

federal collections for the state is given in the IRS Statistics of Income, Individual Income Tax Returns. The proportion of Boston to state collections determined in this way is 12 percent.

An estimate of the total state income tax collections is made from the matrix of mean tax payments. The total for Boston derived from this matrix is \$72,026,100. Twelve percent of the actual total state income tax collections for 1970 is \$62,154,240.. The former figure is 16 percent larger than the estimate of actual collections. Therefore, a new matrix of tax payments is created by dividing each element in the old tax payment matrix by 1.16. This provides a matrix which gives a total state income collection of \$62,154,240, yet maintains the same proportional contribution of each particular family unit. The results of these procedures are shown in Tables III-9A and III-9B.

TABLE III - 9A

COMMONWEALTH OF MASSACHUSETTS INCOME TAXES
COLLECTED FROM RESIDENTS OF CITY OF BOSTON BY INCOME CLASS, 1970

<u>Economic Income Class</u>	<u>Total Tax Payments (thousands of dollars)</u>	<u>Mean Tax Payments</u>
\$ 0 - 999	\$ 0.00	\$ 0.00
1,000 - 1,999	0.00	0.00
2,000 - 2,999	0.00	0.00
3,000 - 3,999	0.00	0.00
4,000 - 4,999	0.00	0.00
5,000 - 5,999	563.12	36.70
6,000 - 6,999	1,550.75	75.00
7,000 - 7,999	3,770.27	169.92
8,000 - 8,999	3,811.29	195.77
9,000 - 9,999	4,090.99	230.92
10,000 - 11,999	7,342.89	263.02
12,000 - 14,999	8,377.77	346.71
15,000 - 24,999	14,696.36	560.87
25,000+	17,950.75	1,260.57
Total	\$62,154.19	

TABLE III - 9B

COMMONWEALTH OF MASSACHUSETTS INCOME TAX
COLLECTED FROM RESIDENTS OF CITY OF BOSTON, 1970

Economic Income Class	Tax Payments By Family Size (Thousands of Dollars)					
	Unrelated Individuals	2	3	4	5	6 or More
\$ 0 - 999	\$ 0.00	0.00	0.00	0.00	0.00	0.00
1,000 - 1,999	0.00	0.00	0.00	0.00	0.00	0.00
2,000 - 2,999	0.00	0.00	0.00	0.00	0.00	0.00
3,000 - 3,999	0.00	0.00	0.00	0.00	0.00	0.00
4,000 - 4,999	0.00	0.00	0.00	0.00	0.00	0.00
5,000 - 5,999	563.12	0.00	0.00	0.00	0.00	0.00
6,000 - 6,999	1550.75	0.00	0.00	0.00	0.00	0.00
7,000 - 7,999	2167.94	826.03	358.63	238.67	107.53	71.48
8,000 - 8,999	1805.58	846.54	464.29	348.06	188.95	157.87
9,000 - 9,999	1481.13	1059.11	595.44	4611.18	261.05	233.08
10,000 - 11,999	1887.00	1895.08	1228.17	1051.65	650.13	630.87
12,000 - 14,999	1340.04	2348.81	1559.45	1369.88	875.13	884.45
15,000 - 24,999	1668.22	3256.88	2899.49	2805.02	1969.05	2097.70
25,000+	3672.69	3549.63	2675.74	3110.20	2402.88	2539.62
Totals	\$16136.48	\$13782.07	\$9781.21	\$9384.66	\$6454.71	\$6615.07

One issue which has not been dealt with in the preceding analysis of the incidence of the income tax is the effect of deducting state income tax payments from federal taxable income, as discussed in the beginning of this chapter. The change in the income incidence structure with respect to income class of the state tax is quite dramatic when deduction from federal taxes is taken into account.²⁴ The effective incidence shifts from a progressive to a nearly proportional or slightly regressive structure. Although inclusion of this deduction does not change the calculations of the actual amounts of income taxes paid to Massachusetts by any family, it does influence any judgments concerning the relative equity of the burden of the shifted taxes.

Sales Tax

An estimate of the amount of sales tax paid by each unit in the family size by economic income class matrix was based on the 1972 Optional State Sales Tax Table for Massachusetts included in the Federal Individual Income Tax Form 1040 (page 21). In order to estimate any one cell of the matrix, the mean taxable income was calculated and the amount of allowable sales tax deduction was determined for the family unit. For families with under \$3,000 income or over \$20,000 income, the formula given in the table was used to estimate sales tax payments.

This procedure results in an estimate of \$64,144,000 in sales tax payments by residents of the Commonwealth and \$6,429,000 paid by City of Boston residents. The ratio of these two figures was used as the estimate of Boston residents' share of total collections from residents of the state (10.023%). The actual amount of sales tax collections in the Commonwealth was \$168,443,000 in 1970. Charles McLure estimates that 20.4 percent of the Massachusetts sales tax is exported from the state.²⁵ In applying McLure's figure, it may be

expected that of the \$168,443,000 total, 79.6 percent, of \$134,081,000, is collected from residents of the Commonwealth. Using the above-cited city-to-state ratio generates an estimate of \$13,439,000 for Boston residents. Since the sales tax allowances authorized by the U.S. Internal Revenue Service are clearly understated, this error is corrected by multiplying each element in the estimated Boston sales tax matrix by the constant:

$$\$168,443/\$64,144 \times .796 = 2.0903$$

to bring the total to \$13,439,000.

It is worth noting that the sales tax in Massachusetts is not as regressive as a general sales tax is depicted to be. This is because of the broad base of exempt items, including all food and clothing, which, along with housing, comprise the bulk of expenditures of lower-income households. The final incidence of the Massachusetts sales tax on Boston residents is summarized in Tables III-10A and III-10B.

Motor Fuel Excise Tax

The motor fuel excise tax in the Commonwealth is a growing revenue source for the State Highway Fund (barring major exacerbations in the current fuel shortage). Following calculations for the other two major state taxes, there are two stages in estimating taxes paid by families in the City of Boston. First, Boston's share of the state total is calculated. Second, the Boston share is distributed across families by family size and income level. These two procedures are discussed in the following paragraphs.

There are two ways in which Boston residents pay the state motor fuel excise: directly as consumers of gasoline, and indirectly as consumers of goods and services the prices of which may include some gasoline tax. The latter occurs because a business in the state treats

TABLE III - 10A

COMMONWEALTH OF MASSACHUSETTS SALES TAXES
COLLECTED FROM RESIDENTS OF CITY OF BOSTON BY INCOME CLASS, 1970

<u>Economic Income Class</u>	<u>Total Tax Payments (thousands of dollars)</u>	<u>Mean Tax Payments</u>
\$ 0 999	\$ 132.80	\$ 4.26
1,000 - 1,999	17.61	4.22
2,000 - 2,999	129.71	8.71
3,000 - 3,999	217.62	13.59
4,000 - 4,999	281.87	18.77
5,000 - 5,999	358.09	23.34
6,000 - 6,999	600.44	29.04
7,000 - 7,999	830.57	37.43
8,000 - 8,999	894.01	45.92
9,000 - 9,999	939.04	53.00
10,000 -11,999	1851.87	66.33
12,000 -14,999	1909.94	79.04
15,000 -24,999	2789.70	106.47
25,000+	2488.47	174.75
Total	\$13441.74	

TABLE III - 10B
COMMONWEALTH OF MASSACHUSETTS SALES TAXES
COLLECTED FROM RESIDENTS OF CITY OF BOSTON
BY INCOME CLASS AND FAMILY SIZE, 1970

Economic Income Class	Tax Payments By Family Size (Thousands of Dollars)					
	Unrelated Individuals	2	3	4	5	6 or More
0 - 999	\$ 114.79	\$ 7.53	\$ 3.36	\$ 2.42	\$ 2.02	\$ 2.69
1,000 - 1,999	16.40	0.67	0.13	0.13	0.13	0.13
2,000 - 2,999	110.22	12.50	3.23	1.48	1.21	1.08
3,000 - 3,999	163.18	30.24	8.60	6.05	4.84	4.70
4,000 - 4,999	188.18	50.94	15.32	9.01	8.20	10.22
5,000 - 5,999	197.46	78.23	28.50	18.82	15.86	19.22
6,000 - 6,999	330.13	119.36	51.35	37.91	27.15	34.55
7,000 - 7,999	302.57	206.33	105.92	86.03	67.21	62.50
8,000 - 8,999	263.32	200.69	125.95	110.49	94.23	99.33
9,000 - 9,999	207.68	234.69	147.32	129.31	107.13	112.91
10,000 - 11,999	269.24	440.75	313.73	297.73	251.90	278.51
12,000 - 14,999	175.15	483.37	344.51	326.63	275.56	304.72
15,000 - 24,999	164.53	572.75	532.97	540.09	461.72	517.64
25,000+	172.05	530.41	408.63	485.65	428.39	463.34
Totals	\$2674.90	\$2968.46	\$2089.52	\$2051.75	\$1745.55	\$1911.54

the gasoline tax it pays on its trucks and trailers a cost of doing business and passes on this cost to its customers in the form of higher prices. Boston residents had 149,279 motor vehicles registered²⁶ out of 2,490,950 total vehicles registered in the state as a whole in 1970. Assuming that driving habits are similar across the state, the ratio of these two numbers gives the direct share of the gasoline tax paid by Boston residents -- 5.993 percent. Businesses in Boston had 16,361 trucks and trailers registered, which is .657 percent of the total number of such vehicles in the state. According to the general consumer arguments developed in the property tax discussion, a tax on Boston business which is passed on entirely to consumers will be 73 percent exported (net of importing from the rest of the state). This means that the additional (indirect) share paid by Boston residents is .177 percent of the total motor fuel excise, and a total share (as auto owners and net consumers) of 6.17 percent (5.99 plus .18) of the total state tax borne by Boston residents.

The direct share of the tax was distributed across families by the following procedure: Table B-3 of the Metropolitan Housing Characteristics of the 1970 Census gives the number of cars available to households by income class for the City of Boston. The U. S. Department of Transportation²⁷ and the Massachusetts Department of Public Works (in its motor fuel excise estimates) calculate that the average car uses 843 gallons of gasoline per year. If this is true for Massachusetts, then the average contribution to the motor fuel excise tax receipts in 1970 was:

$$843 \text{ gallons} \times 6.5\text{¢ per gallon} = \$54.795 \text{ per car}$$

This payment per car multiplied by the number of cars registered in Massachusetts gives an estimate of \$136,392,000 in motor fuel excise tax revenue for Massachusetts, only slightly higher than actual 1970 collections of \$135,916,000. The ratio of these two was calculated and used to adjust the calculated mean tax figures discussed below:

$$b = \$135,916 / \$136,392 = .9965$$

The number of cars available by income class was multiplied by the mean tax per car to get the aggregate tax for each income class. Then the number of cars available was assumed to be independent of family size, given income class (the number of motor vehicles is likely to be a function of the number of people in the household who are working rather than simply the number of people), except for unrelated individuals who clearly would not be likely to operate more than one car full time. The mean tax per household was calculated by (1) dividing the aggregate tax for the income class by the total number of households in the income class, and (2) by assigning this mean tax to all household sizes in the income class except unrelated individuals (it was assumed that individuals pay 10 percent less on the average; this reduction in what unrelated individuals pay adds slightly to the share paid by families). The number of cars reported in the 1970 Census for residents of the City of Boston was only 115,911, which is less than the 149,279 reported by the State Department of Public Works. Thus another corrective factor was applied to get the mean tax in each cell:

$$a = 149,279 / 115,911 = 1.2879$$

The tax estimated as above for each income class by household size was multiplied by a to convert cars enumerated by the U. S. Census

to registered cars, and by b to make the total calculated revenue correspond to the actual collections. Finally, these adjusted mean tax figures were applied to the appropriate economic income class cells, using the same correspondence between census income and economic income discussed in the property tax section of this chapter.

The indirect portion of the tax, minus its exported component, was distributed across families and unrelated individuals according to the general consumption matrix adapted from BLS 1960-61 data, discussed in the property tax section. The summation of the direct and indirect components of the motor fuel excise tax burden of the City of Boston residents is shown in Tables III-11A and III-11B.

Tax Burden Distribution

The previous results may be summarized by looking at the percentage distribution of all the taxes across income classes (Table III-12) and the tax burden (tax liability divided by income) for each class (Table III-13)

TABLE III - 11A

COMMONWEALTH OF MASSACHUSETTS MOTOR FUEL EXCISE TAXES COLLECTED FROM RESIDENTS OF CITY OF BOSTON BY INCOME CLASS

Economic Income Class	Total Tax Payments (thousands of dollars)	Mean Tax Payments
\$ 0 999	\$ 361.40	\$11.58
1,000 - 1,999	51.37	12.30
2,000 - 2,999	196.02	13.16
3,000 - 3,999	226.40	14.14
4,000 - 4,999	229.19	15.26
5,000 - 5,999	270.90	17.65
6,000 - 6,999	439.26	21.24
7,000 - 7,999	591.13	26.64
8,000 - 8,999	650.17	33.40
9,000 - 9,999	676.44	38.18
10,000 - 11,999	1225.76	43.91
12,000 - 14,999	1217.28	50.38
15,000 - 24,999	1482.36	56.57
25,000+	854.35	60.00
Total	\$8472.03	

Even if the lowest income class is ignored (its bias has been previously discussed), the property tax is regressive along its full

TABLE III - 11B

COMMONWEALTH OF MASSACHUSETTS MOTOR FUEL
EXCISE TAXES COLLECTED FROM RESIDENTS OF CITY
OF BOSTON BY INCOME CLASS AND FAMILY SIZE, 1970

Economic Income Class	Unrelated Individuals	Tax Payments By Family Size (Thousands of Dollars)					
		2	3	4	5	6 or more	Totals
0 -	999	\$ 311.64	\$ 10.19	\$ 7.26	\$ 4.16	5.30	
1,000 -	1,999	47.62	0.59	0.42	0.25	0.25	
2,000 -	2,999	169.97	4.26	2.09	1.17	1.03	
3,000 -	3,999	179.14	7.81	5.45	3.20	3.16	
4,000 -	4,999	166.37	10.80	6.34	4.32	5.27	
5,000 -	5,999	162.66	20.49	13.61	8.11	9.75	
6,000 -	6,999	277.11	32.52	24.26	13.20	16.68	
7,000 -	7,999	272.25	68.39	55.77	32.32	29.91	
8,000 -	8,999	241.10	88.03	77.39	50.76	53.38	
9,000 -	9,999	188.04	105.14	92.46	60.56	63.69	
10,000 -	11,999	235.46	208.75	198.88	137.93	152.90	
12,000 -	14,999	145.61	225.98	214.63	149.33	165.67	
15,000 -	24,999	125.44	289.98	294.29	217.98	244.58	
25,000+	103.09	177.24	136.49	164.12	131.29	142.12	
Totals	\$2625.50	\$1772.06	\$1209.42	\$1156.97	\$814.58	\$893.69	

range. The state income tax, because of the standard \$2,000 deduction and the higher rate of tax on unearned income, is mildly progressive among those who pay it at all (economic income over \$5,000). Except for the lowest class, the state sales tax is also mildly progressive across the low and middle range (up to \$12,000 economic income) and declines slightly as a percent of income for the highest income groups. This is because of the exemption of food and clothing from the tax, which comprise a greater part of consumption for low income families. Finally, the state motor fuel excise tax is regressive over the range of economic incomes up to \$6,000, mildly progressive from that point to \$12,000 (probably due to the fact that the number of cars per family increases with income), declining again as a percent of income at the top of the income range.

The overall burden of all four taxes combined as presently levied is shown in column 5 of Tables III-12 and III-13, and is also depicted in Figure III-2. Because the property tax is proportionately the heaviest of the four, its regressivity dominates the overall series, with slight progressivity appearing in the \$4,000-\$8,000 economic income range because all three of the other taxes are progressive in that range. Using the Orr hypothesis, Column 1 of Table III-12 would have shown lower percentages of the property tax for every income group except the highest, the top class alone bearing almost 25 percent of the tax. The distribution of all taxes combined would also have been less regressive, both because the property tax input is less regressive and because the property tax is less heavy on Boston residents since there is more exporting under Orr's formula.

TABLE III - 12

DISTRIBUTION OF TAX PAYMENTS IN CITY OF BOSTON BY INCOME CLASS,
1970
(as percent)

<u>Economic Income Class</u>	<u>Local Property Tax</u>	<u>State Income Tax</u>	<u>State Sales Tax</u>	<u>State Motor Fuel Excise</u>	<u>Total</u>
0 - 999	5.3%	-	1.0%	4.3%	3.7%
1,000 - 1,999	0.9	-	0.1	0.6	0.6
2,000 - 2,999	3.2	-	1.0	2.3	2.3
3,000 - 3,999	3.5	-	1.6	2.7	2.5
4,000 - 4,999	3.4	-	2.1	2.7	2.5
5,000 - 5,999	4.1	0.9%	2.7	3.2	3.2
6,000 - 6,999	6.0	2.4	4.5	5.2	5.0
7,000 - 7,999	7.1	6.1	6.2	7.0	6.8
8,000 - 8,999	6.7	6.1	6.6	7.7	6.6
9,000 - 9,999	6.6	6.6	7.0	8.0	6.7
10,000 - 11,999	11.2	11.8	13.8	14.5	11.6
12,000 - 14,999	11.2	13.5	14.2	14.4	12.1
15,000 - 24,999	15.5	23.6	20.7	17.5	17.9
25,000+	15.2	28.9	18.5	10.0	18.6
Totals	100.0	100.0	100.0	100.0	100.0

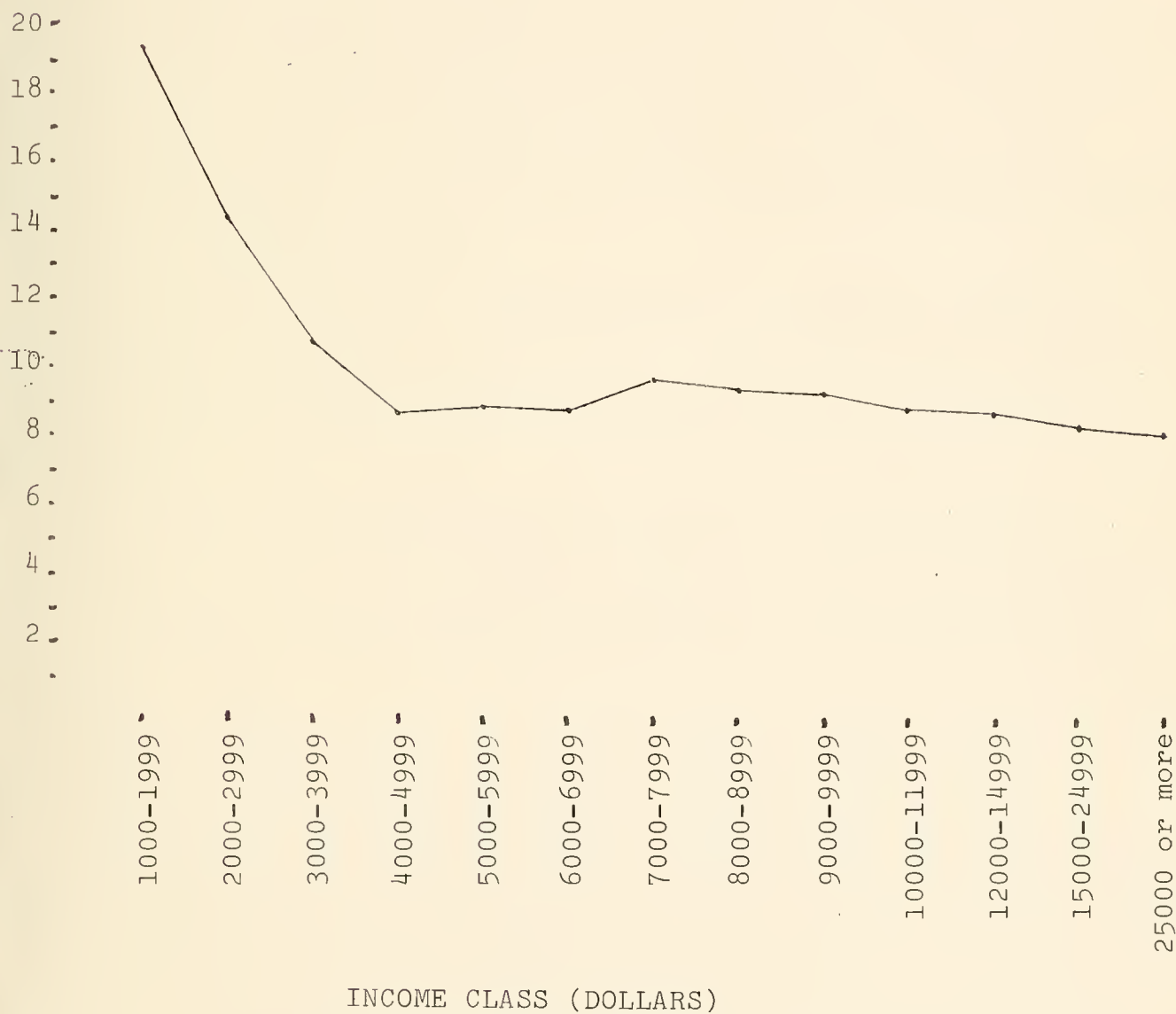
TABLE III - 13

MEAN TAX AS A PERCENT OF MEAN INCOME IN CITY OF BOSTON
BY INCOME CLASS, 1970

<u>Economic Income Class</u>	<u>Property Tax</u>	<u>Income Tax</u>	<u>Sales Tax</u>	<u>Motor Fuel Excise Tax</u>	<u>Total</u>
0 - 999	483.67%	0.00%	7.46%	20.31%	511.44%
1,000 - 1,999	18.89	0.00	0.24	0.69	19.82
2,000 - 2,999	13.88	0.00	0.34	0.52	14.75
3,000 - 3,999	10.18	0.00	0.39	0.41	10.98
4,000 - 4,999	8.16	0.00	0.41	0.34	8.91
5,000 - 5,999	7.76	0.67	0.42	0.32	9.17
6,000 - 6,999	7.20	1.15	0.44	0.32	9.11
7,000 - 7,999	6.90	2.26	0.50	0.36	10.02
8,000 - 8,999	6.58	2.30	0.54	0.39	9.82
9,000 - 9,999	6.36	2.42	0.56	0.40	9.74
10,000 - 11,999	5.86	2.39	0.60	0.40	9.25
12,000 - 14,999	5.59	2.58	0.59	0.38	9.14
15,000 - 24,999	5.02	2.96	0.56	0.30	8.84
25,000+	4.52	3.31	0.46	0.16	8.45

FIGURE III - 2
DISTRIBUTION OF TAX BURDEN IN
CITY OF BOSTON BY INCOME CLASS, 1970

TAXES PER DOLLAR OF ECONOMIC INCOME IN CENTS



Lowest income class has not been included because it would be far off the chart. See column 5 of Table III-13.

B. TAX BURDEN EFFECTS OF STATE ASSUMPTION
OF ADMINISTRATION/FINANCING OF SELECTED MUNICIPAL SERVICES

To determine the effects on tax payments by household groups of the proposed shifting of services administration and/or financing from the local to the state level, several explicit assumptions must be made about how the shift would occur:

(1) The Boston property tax would be reduced by the amount of current (1970) expenditures on the services being shifted (column 1 of Table III-14). Estimated relief to local taxpayers is equivalent to the locally-raised (non-exported) share of such property taxes distributed in proportion to how much of the burden is presently borne by different household groups.

(2) The total increase in state taxes to cover the financing of the shifted municipal services is equal to the 1970 statewide expenditures by cities and towns for these services. (See column 3 of Table III-14).

It is clear that Boston residents' share of these incremental state taxes depends on which taxes are used to finance the increase to the Commonwealth and on Boston's allocation of the statewide base for each tax.

Several alternatives are open to the state in financing the additional costs; this report examines two of the more likely choices:

(1) Increases in the state sales tax, state income tax, and state motor fuel excise tax.

(2) Increases in the state income tax and motor fuel excise tax.

Shifting the Financing to Three State Taxes: Sales, Income, and Motor Fuel

Boston's 1970 expenditures for all the services discussed in this report amount of \$73,829,000, or roughly one-fourth of the city's total

property tax levy. Since the city's residents however, pay only 60 percent of this total, according to the estimates generated in this report, the total local relief would be reduced to \$47,029,000.

The estimated cost of these services to all cities and towns in the state (including Boston) is \$236,686,000. Thus Boston residents in 1970 contributed 20 percent of the total cost of these services, mainly through property taxes. In contrast, Boston residents pay only 12 percent of the state income tax, 8 percent of the sales tax, and 6 percent of the gasoline tax, mainly because they have lower average incomes and less consumption than the rest of the state. Thus a financing shift from local property taxes to any combination of these other state taxes must result in a lower total tax burden on Boston residents.

The shift to three state taxes under this alternative would have the following results:

- (1) The Boston property tax is reduced by \$73,829,000;
- (2) The sales tax is increased by \$110,416,000;
- (3) The income tax is increased by the same amount as the sales tax;
- (4) The motor fuel excise is raised by \$15,853,000.

Of the total increases in state taxes, Boston residents would pay \$8.8 million of the sales tax increase, \$13.3 million of the income tax increase, and \$990 thousand of the gasoline tax increase, resulting in a total tax increase of \$23.1 million, offset by the local share of the property tax reduction of \$47.0 million. This leaves a net reduction in taxes paid by Boston residents of \$23.9 million.

It is important to take note of the relative magnitude of this result. Total state and local property, income, sales and gasoline taxes borne by Boston residents in 1970 amounted to \$236.8 million. By shifting the source of financing for selected municipal services without making adjustments for service levels and price changes, the total state and local tax burden on Boston residents can be reduced by about 10 percent.

The distribution of the resulting burden is changed by the shift from a highly regressive tax source to several less regressive financing sources. Changes in payments by income class and family size are shown in Tables III-14 and III-15. These tables show the total (and mean) tax decline for all income groups, and indicate that the shift is progressive in the sense of giving greater relief (per dollar of income) as one moves down the income scale. However, this makes the resulting total burden of the four taxes only very slightly less regressive (the slope is less steep than that depicted in Figure III-2), on both sides of the progressive lower-middle range because the change is not great relative to the total amount of taxes levied.

The more detailed Table III-15, which shows changes in burdens by family size as well as income class, discloses that some households actually pay more tax after the shift: unrelated individuals with economic income greater than \$25,000 would be liable for increased taxes. It should be remembered that this analysis deals with mean incomes and mean taxes by family size and income class, and within each cell of the matrix, there is, in fact, a wide diversity of actual tax payments.

TABLE III - 14

CHANGES IN TAX PAYMENTS IN CITY OF BOSTON BY INCOME CLASS AS A
RESULT OF SHIFTING SELECTED FUNCTIONS FROM LOCAL PROPERTY TAX
TO A COMBINATION OF STATE INCOME, SALES, AND MOTOR FUEL EXCISE TAXES,
1970

<u>Economic Income Class</u>	<u>Net Change In Total Tax Payments (thousands of dollars)</u>	<u>Net Change In Mean Tax Payments</u>
\$ 0 - 999	\$ -2377.45	\$ -76.18
1,000 - 1,999	- 389.73	-93.35
2,000 - 2,999	-1419.72	-95.33
3,000 - 3,999	-1475.93	-92.18
4,000 - 4,999	-1409.15	-93.85
5,000 - 5,999	-1527.39	-99.54
6,000 - 6,999	-2059.12	-99.59
7,000 - 7,999	-1925.77	-86.79
8,000 - 8,999	-1695.45	-87.09
9,000 - 9,999	-1558.60	-87.98
10,000 - 11,999	-2329.79	-83.45
12,000 - 14,999	-2099.59	-86.89
15,000 - 24,999	-2139.19	-81.64
25,000+	-1572.75	-110.45
Total	\$ -23979.61	

Netzer's Case 2 applied to this transfer of financing to three state taxes would not only generate greater total relief to Boston residents (less exporting of the property tax), but would also result in a more "progressive" distribution of the relief, so that one group in the top income class would receive no relief, and in fact would pay more taxes after the shift than under the present system; that group is "unrelated individuals". Every other income class would pay less tax after the shift under Netzer's Case 2 than under Netzer's Case 1. What this makes clear is that Netzer's Case 2 assumes the property tax to be a more regressive tax than the standard

TABLE III - 15

CHANGES IN TAX PAYMENTS IN THE CITY OF BOSTON BY INCOME CLASS AND FAMILY SIZE
AS A RESULT OF SHIFTING SELECTED SERVICES
FROM THE LOCAL PROPERTY TAX
TO A COMBINATION OF STATE SALES, INCOME, AND MOTOR FUEL EXCISE TAXES,
1970

Net Change in Taxes Paid Per Dollar of Economic Income by Family Size (In Cents)							
Economic Income Class	Unrelated Individuals						
		2	3	4	5	6	All
\$ 0 - 999	-132.63	-146.44	-138.14	-138.49	-123.35	-128.56	-133.58
1,000 - 1,999	-5.17	-7.04	-5.80	-5.63	-5.02	-5.84	-5.26
2,000 - 2,999	-3.67	-4.71	-3.85	-3.89	-3.41	-3.96	-3.76
3,000 - 3,999	-2.63	-2.88	-2.69	-2.63	-2.43	-2.74	-2.66
4,000 - 4,999	-2.04	-2.25	-2.09	-2.06	-1.91	-1.88	-2.07
5,000 - 5,999	-1.71	-2.05	-1.88	-2.02	-1.77	-1.64	-1.80
6,000 - 6,999	-1.39	-1.81	-1.69	-1.87	-1.64	-1.50	-1.52
7,000 - 7,999	-1.04	-1.21	-1.27	-1.41	-1.33	-1.31	-1.16
8,000 - 8,999	-0.85	-1.03	-1.12	-1.21	-1.19	-1.24	-1.03
9,000 - 9,999	-0.72	-0.88	-0.99	-1.12	-1.10	-1.12	-0.92
10,000 - 11,999	-0.54	-0.68	-0.79	-0.91	-0.86	-0.94	-0.76
12,000 - 14,999	-0.33	-0.56	-0.68	-0.76	-0.75	-0.85	-0.65
15,000 - 24,999	-0.10	-0.33	-0.46	-0.50	-0.51	-0.57	-0.43
25,000+	0.06	0.26	0.31	0.39	0.43	0.46	0.29

case considered in the table, and under those assumptions property tax relief gives more benefit to lower income groups.

Moving to the other side of the "standard" case, one can see the modifications in the results which follow from adopting the Orr approach. Because more of the property tax relief is exported, the total relief to Boston taxpayers is about two-thirds that reflected in the tables. And because the property tax burden is not seen as regressive, the relief is regressive; that is, it favors the higher income groups; for example, the highest economic income group gets more relief (as a percent of income) than the \$7,000 - \$8,000 income class does. All the classes get some relief, but less than that shown in the tables, except for the highest income group which receives more relief than that shown.

The results of this shift to these state taxes on the basis of projected 1973 expenditures with changes in service level have also been estimated. As summarized in Table II -15, total Boston expenditures in 1973 for the functions under discussion in this study are estimated to be \$90,495,000, and the statewide total (all municipalities), \$280,663,000. However, when the state takes over financing of these functions, changes in the level of some services offered to all residents are expected to result in the state spending \$363,182,000 to absorb these functions, while municipal governments save the \$280.7 million. Shifting this state government total to the same combination of state taxes as above would add \$93.3 million to the motor fuel excise and \$134.9 each to the income and sales taxes.

Taxes paid by Boston residents would be affected as follows: the non-exported property tax would fall by \$57.6 million; residents would pay \$16.2 million more income tax, \$10.8 million more sales tax, and \$5.8 million more gasoline tax. Total taxes thus would fall by \$24.9 million. The distribution of this net change in burden across income classes is shown in Table III-16. The net total change is close to that shown in Tables III-13 and III-14, but its distribution across classes is different because the various state taxes are changed to different degrees: proportionately, the income and sales taxes rise by less than the gasoline tax. As a result, the net change in burden is slightly more favorable to lower income groups (up to \$9000 economic income) than the shift shown in Tables III-13 and III-14, which is based on 1970 costs.

Shifting the Financing to Two State Taxes: Income and Motor Fuel

As pointed out in the preceding section, any shift from local finance to state taxes must result in a decrease in the total tax burden on Boston residents. Because Boston residents pay a higher share of the total state income tax than of the sales tax, the shift discussed in this section results in less overall reduction than the shift to all three taxes. The change in burdens among income classes is also different. Specifically, the revenue changes under the two-tax arrangement are as follows:

- (1) The Boston property tax is reduced by \$73,829,000;
- (2) The state income tax is increased by \$220,833,000;
- (3) The state motor fuel excise rises by \$15,853,000.

Net total payments by Boston residents are reduced by \$19.5 million, the result of paying \$990,000 more in gasoline taxes and \$26.5 million

TABLE III - 16

CHANGES IN TAX PAYMENTS IN THE CITY OF BOSTON BY INCOME CLASS
 AS A RESULT OF SHIFTING SELECTED SERVICES
 FROM THE LOCAL PROPERTY TAX
 TO A COMBINATION OF STATE SALES, INCOME, AND MOTOR FUEL EXCISE TAXES --
 ESTIMATED 1973 EXPENDITURES WITH CHANGES IN SERVICE LEVEL

Economic Income Class	Net Change in Total Tax Payments (thousands of dollars)	Net Change in Mean Tax Payment	Net Change In Taxes Paid per Dollar of Economic Income (cents)
\$ 0 - 999	\$ -2718.05	\$ -87.10	-152.72
1,000 - 1,999	- 449.84	-107.74	- 6.07
2,000 - 2,999	-1633.99	-109.72	- 4.32
3,000 - 3,999	-1686.58	-105.34	- 3.04
4,000 - 4,999	-1603.37	-106.79	- 2.35
5,000 - 5,999	-1726.24	-112.50	- 2.04
6,000 - 6,999	-2287.83	-110.65	- 1.69
7,000 - 7,999	-2044.09	- 92.12	- 1.23
8,000 - 8,999	-1729.88	- 88.86	- 1.05
9,000 - 9,999	-1548.19	- 87.39	- 0.92
10,000 - 11,999	-2199.58	- 78.79	- 0.72
12,000 - 14,999	-1922.95	- 79.58	- 0.59
15,000 - 24,999	-1834.32	- 70.00	- 0.37
25,000+	-1483.06	-104.15	- 0.27
Total	\$-24867.93		

TABLE III - 17

CHANGES IN TAX PAYMENTS IN CITY OF BOSTON BY INCOME CLASS
 AS A RESULT OF SHIFTING VARIOUS FUNCTIONS
 FROM LOCAL PROPERTY TAX
 TO A COMBINATION OF STATE INCOME TAX AND MOTOR FUEL EXCISE,
 1970

<u>Economic Income Class</u>	<u>Net Change In Total Tax Payments (thousands of dollars)</u>	<u>Net Change In Mean Tax Payments</u>
\$ 0 - 999	\$ -2464.50	\$- 78.97
1,000 - 1,999	- 401.28	- 96.11
2,000 - 2,999	-1504.75	-101.04
3,000 - 3,999	-1618.58	-101.09
4,000 - 4,999	-1593.92	-106.16
5,000 - 5,999	-1642.08	-107.01
6,000 - 6,999	-2122.13	-102.63
7,000 - 7,999	-1666.47	- 75.10
8,000 - 8,999	-1469.00	- 75.46
9,000 - 9,999	-1302.05	- 73.49
10,000 - 11,999	-1978.37	- 70.86
12,000 - 14,999	-1565.62	- 64.79
15,000 - 24,999	- 834.93	- 31.86
25,000+	622.73	43.73
Total	\$-19540.91	

more in income taxes, offset by the reduction of \$47.0 million in the local share of property taxes.

The distribution of the above net reduction across income classes is more "progressive" in the upper income ranges than in the shift which included the sales tax. The highest income class would actually pay more taxes after the shift than before, the tax relief (mean and as percent of income) decreasing at a more rapid rate toward the top of the income scale. (See Tables III-17 and III-18.) It should be noted that in the over-\$25,000 economic income class, all families of three or fewer members would pay more total taxes after the shift; in the \$12,000 - \$25,000 range, "unrelated individuals" would also get

TABLE III - 18

CHANGES IN TAX PAYMENTS IN CITY OF BOSTON BY INCOME CLASS AND FAMILY SIZE
AS A RESULT OF SHIFTING SELECTED SERVICES
FROM THE LOCAL PROPERTY TAX

TO A COMBINATION OF STATE INCOME TAX AND MOTOR FUEL EXCISE TAX,
1970

Net Change in Taxes Paid Per Dollar of Economic Income by Family Size
(In Cents)

\$	Economic Income Class	Unrelated Individuals	Net Change in Taxes Paid Per Dollar of Economic Income by Family Size (In Cents)					
			2	3	4	5	6	All
	0 - 999	-137.51	-150.97	-142.68	-143.05	-129.97	-135.49	-138.47
	1,000 - 1,999	- 5.33	- 7.19	- 5.92	- 5.80	- 5.27	- 6.12	- 5.42
	2,000 - 2,999	- 3.89	- 4.98	- 4.13	- 4.15	- 3.79	- 4.35	- 3.98
	3,000 - 3,999	- 2.87	- 3.19	- 3.00	- 2.94	- 2.85	- 3.17	- 2.92
	4,000 - 4,999	- 2.28	- 2.58	- 2.43	- 2.40	- 2.37	- 2.34	- 2.34
	5,000 - 5,999	- 1.73	- 2.35	- 2.18	- 2.32	- 2.19	- 2.07	- 1.94
	6,000 - 6,999	- 1.26	- 2.15	- 2.03	- 2.20	- 2.08	- 1.94	- 1.57
	7,000 - 7,999	- 0.69	- 1.10	- 1.23	- 1.45	- 1.57	- 1.62	- 1.00
	8,000 - 8,999	- 0.52	- 0.89	- 1.04	- 1.20	- 1.36	- 1.47	- 0.89
	9,000 - 9,999	- 0.36	- 0.71	- 0.88	- 1.06	- 1.20	- 1.27	- 0.77
	10,000 - 11,999	- 0.19	- 0.52	- 0.68	- 0.85	- 0.94	- 1.07	- 0.64
	12,000 - 14,999	- 0.08	- 0.34	- 0.50	- 0.62	- 0.74	- 0.88	- 0.48
	15,000 - 24,999	- 0.43	- 0.02	- 0.18	- 0.25	- 0.35	- 0.43	- 0.17
	25,000+	- 0.75	- 0.13	- 0.06	- 0.04	- 0.13	- 0.18	- 0.11

negative relief.

The results may be compared with those from alternative assumptions about who bears the property tax (and in this case, who therefore receives the property tax relief). Netzer's Case 2 (in which consumers bear more of the tax) shows low income groups receiving more of the relief. Orr again results in less total relief to Boston, the additional burden being paid in particular by the two income classes immediately below the top class, who pay more taxes after the financing transfer. The top class, in contrast to the table results, would also receive some tax relief, because the Orr case suggests that they are paying a large share of the property tax burden.

The results of shifting estimated 1973 expenditures with assumed service level changes to the two state taxes is also examined. (Totals from Table II-15). Boston residents would pay \$57.6 million less in local property taxes, \$32.4 million in additional income taxes and \$5.8 million more gasoline tax, leaving them with a net tax reduction of \$19.4 million. The distribution of the burden change is shown in Tables III-19 and III-20. The substantial shift to the income tax makes the net change progressive: Boston residents with economic incomes over \$15,000 actually would pay more taxes after the shift than under the present arrangement.

Summary

In summarizing the results of this chapter, it is important to take note of several factors. First, the crucial reason that Boston receives tax relief through statewide shifting of selected functions to the Commonwealth is that in spite of some exporting of the property tax burden, Boston residents presently pay a relatively high share of

TABLE III - 19

CHANGES IN TAX PAYMENTS IN CITY OF BOSTON BY INCOME CLASS
 AS A RESULT OF SHIFTING SELECTED SERVICES
 FROM THE LOCAL PROPERTY TAX
 TO A COMBINATION OF STATE INCOME AND MOTOR FUEL EXCISE TAXES --
 ESTIMATED 1973 EXPENDITURES WITH CHANGES IN SERVICE LEVEL

<u>Economic Income Class</u>	<u>Net Change In Total Tax Payments (Thousands of dollars)</u>	<u>Net Change In Mean Tax Payments</u>
\$ 0 - 999	\$ -2824.45	\$ -90.51
1,000 - 1,999	- 463.94	-111.12
2,000 - 2,999	-1737.91	-116.70
3,000 - 3,999	-1860.93	-116.23
4,000 - 4,999	-1829.19	-121.83
5,000 - 5,999	-1866.41	-121.63
6,000 - 6,999	-2364.84	-114.37
7,000 - 7,999	-1727.19	- 77.84
8,000 - 8,999	-1453.12	- 74.64
9,000 - 9,999	-1234.63	- 69.69
10,000 -11,999	-1770.08	- 63.40
12,000 -14,999	-1270.35	- 52.57
15,000- 24,999	- 240.30	- 9.17
25,000+	1200.17	84.28
Total	\$-19443.12	

total statewide expenditures for these services, a higher share through the property tax than their share of any of the tax bases on which state taxes are levied. This is not to say that Boston residents receive a corresponding share of the services. As discussed in Chapter II, there is reason to believe that present financing patterns through the local property tax do not represent a proper match of the beneficiaries of services with those who pay for them, and that shifting to state finance may in fact more adequately match costs and benefits. Second, all of these results speak of property tax "relief", implying a reduction of the tax levy in Boston. Alternatively, the decision might be made to keep taxes where they are and to use the

TABLE III - 20
CHANGES IN TAX PAYMENTS IN CITY OF BOSTON BY INCOME CLASS AND FAMILY SIZE
AS A RESULT OF SHIFTING SELECTED SERVICES
FROM LOCAL PROPERTY TAX
TO A COMBINATION OF STATE INCOME AND MOTOR FUEL EXCISE TAXES --
ESTIMATED 1973 EXPENDITURES WITH CHANGES IN SERVICE LEVEL

Net Change in Taxes Paid Per Dollar of Economic Income by Family Size (In Cents)							
Economic Income Class	Unrelated Individuals	2	3	4	5	6	All
\$ 0 - 999	-157.57	-173.66	-163.48	-164.01	-148.00	-154.75	-158.69
1,000 - 1,999	-6.16	-8.38	-6.85	-6.67	-6.07	-7.07	-6.27
2,000 - 2,999	-4.49	-5.79	-4.76	-4.78	-4.34	-5.02	-4.60
3,000 - 3,999	-3.30	-3.67	-3.45	-3.38	-3.26	-3.65	-3.35
4,000 - 4,999	-2.62	-2.97	-2.78	-2.75	-2.71	-2.67	-2.68
5,000 - 5,999	-1.95	-2.70	-2.50	-2.66	-2.51	-2.35	-2.20
6,000 - 6,999	-1.37	-2.46	-2.31	-2.52	-2.37	-2.20	-1.75
7,000 - 7,999	-0.66	-1.16	-1.31	-1.58	-1.73	-1.79	-1.04
8,000 - 8,999	-0.43	-0.88	-1.07	-1.26	-1.45	-1.59	-0.88
9,000 - 9,999	-0.24	-0.65	-0.86	-1.07	-1.25	-1.34	-0.73
10,000 - 11,999	-0.03	-0.42	-0.61	-0.82	-0.93	-1.09	-0.58
12,000 - 14,999	-0.28	-0.22	-0.41	-0.55	-0.70	-0.87	-0.39
15,000 - 24,999	-0.67	-0.13	-0.06	-0.15	-0.27	-0.37	-0.05
25,000+	-0.97	-0.24	-0.16	-0.04	-0.07	-0.13	-0.22

freed-up revenues for other public purposes. This is clearly a decision to be made by elected city officials; but it should be remembered that City of Boston residents do pay state taxes, so that the reduction in property taxes is not experienced as total "relief". For example, in the first case discussed, Boston property taxes would be reduced by \$74 million and Boston residents would receive net relief from all taxes of \$21 million. Finally, in making any decisions about the form that the shifting should take, one should be as aware of the consequences in the distribution of the burden among Boston taxpayers as of the total net reductions foreseen. Using the combination of three state taxes discussed above provides more relief in total to residents of the City of Boston, while the shift to only two taxes (the income tax and motor fuel excise) concentrates a smaller amount of total relief among the lower income classes. Thus, there is a very real trade-off between greater relief to poorer groups and larger total municipal tax relief in making a decision about what financing form the services takeover by the state should take.

FOOTNOTES
TO
CHAPTER III

1. Adapted from Walter Vogt, "The Tax Burden Implications of Centralization," prepared for the Temporary State Commission To Make A Study of the Government Operation of the City of New York (1973).
2. For a complete discussion of the methodology used, see Syracuse University Corporation, "An Estimated Income Distribution for Metropolitan Areas: Methodology," (1972).
3. U. S. Bureau of the Census, Census of Governments, 1967, Vol.2, Taxable Property Values, Table 19, pp. 132-133, Boston.
4. Dick Netzer, Economics of the Property Tax (Washington: Brookings, 1966), p.53.
5. Ibid., Table D-1, p. 259.
6. Internal Revenue Service, Statistics of Income - 1967, Business Income Tax Returns (U. S. Government Printing Office, Washington, D. C., 1970), Table 1.1.
7. 1967 Census of Business, Vol. V, Selected Services Area Statistics, part 2.
8. 1967 Census of Transportation, Vol. III, Commodity Transportation Survey, part 2.
9. 1963 Census of Manufactures, Vol. III, Area Statistics.
10. Charles E. McLure, Jr., "The Interstate Exporting of State and Local Taxes: Estimates for 1962," National Tax Journal, Vol. XX, No. 1 (March, 1967).
11. Internal Revenue Service, Statistics of Income - 1967, Business Income Tax Returns, Table 1.1.
12. Ibid., Tables 2.5, 3.6, and 5.6, Massachusetts.
13. Larry L. Orr, "The Incidence of Differential Property Taxes on Urban Housing," National Tax Journal, 21: 253-62 (September, 1968).
14. Peter Mieszkowski, "The Property Tax: An Excise Tax or a Profits Tax?" Journal of Public Economics, 1: 73-96 (April, 1972).
15. Advisory Commission on Intergovernmental Relations, State-Local Finances: Significant Features and Suggested Legislation (Washington, D.C. 1972), Table 102.

16. U. S. Bureau of the Census, Census of Housing: 1970, Metropolitan Housing Characteristics, Final Report HC (2)-30 Boston, Mass. SMSA. Table B-2; Table B-1 shows such data by housing value.
17. Ibid., Table B-3.
18. Calculated from ACIR (op. cit.) Table 102, and Boston Safe Deposit and Trust Co.'s "Financial Statistics of Massachusetts," 1970.
19. This discussion of the Massachusetts income tax structure and incidence is based in very large part on Edward Moscovitch's "State Graduated Income Taxes -- A State Initiated Form of Federal Revenue Sharing," National Tax Journal, March, 1972. This article makes a very interesting comparison of the present Massachusetts income tax with several graduated rate taxes as to incidence, revenue growth, and shift of burden to the federal government.
20. This information is based on data from federal income tax returns filed in Massachusetts and reported in Statistics of Income: Individual Income Tax Returns, Internal Revenue Service; see Moscovitch, ibid.
21. U. S. Bureau of the Census, Census of Population: 1970, General Social and Economic Characteristics, Final Report PC (1)- C23 Massachusetts, Table 90.
22. See Moscovitch, op. cit., Appendix Table 2.
23. Internal Revenue Service, Federal Individual Income Tax Return Data for Each 5-Digit Zip Code Area in Massachusetts: 1969 (May, 1972).
24. See Moscovitch, op. cit.
25. Charles E. McLure, Jr., op. cit.
26. Registration figures are from the Massachusetts Department of Public Works table, "Adjusted Number of Automobile Registrations for the Commonwealth of Massachusetts," 1970.
27. U. S. Department of Transportation, Federal Highway Administration, "Highway Statistics 1970" Motor Fuel Use Table.

TABLE A - 1

METHODOLOGY SUMMARY - PROPERTY TAX BURDEN

	Case 1	Case 2
Residential property		
owner-occupiers bear	100%	100%
renter-occupiers bear	80%	100%
owners of rental units bear	20%	0%
They are 37% corporate and 63% noncorporate*		
Commercial property		
Retail		
consumers bear	75%	100%
They are 60% residents and 40% nonresidents		
owners bear	25%	0%
They are 54% corporate and 46% noncorporate*		
Wholesale		
consumers bear	75%	75%
They are 24% residents and 76% nonresidents		
owners bear	25%	25%
They are 81% corporate and 19% noncorporate*		
Manufacturing		
consumers bear	50%	90%
They are 25% residents and 75% non-residents		
owners bear	50%	10%
They are 98% corporate and 2% noncorporate*		
Finance, insurance, real estate and business services:		
consumers bear	75%	75%
They are 30% residents and 70% non-residents		
owners bear	25%	25%
They are 94% corporate and 6% noncorporate*		
Vacant land		
owners bear	100%	100%
They are 19% corporate and 81% noncorporate*		

*Corporate owners are 21% residents and 79% non-residents;
Noncorporate owners are 76% residents and 24% non-residents.

TABLE A - 2
PROPERTY TAX SUMMARY

Who Bears Final Burden-Percent of Total Tax									
	Percent of Base	Consumers of Housing Services	Consumers of Boston Goods + Services		Owners of Boston Corporate		Non corporate		Other
			Boston Residents	Other	Boston Residents	Other Residents	Boston Residents		
<u>Netzer Case 1</u>									
Residential property	41.1								
Owner-occupied	(13.4)	13.4			0.4	1.6	2.7		0.8
Rental units	(27.7)	22.2							
Non-residential	55.4								
Retail	(27.7)			12.5	8.3	0.8	2.9	2.4	0.8
Wholesale	(7.7)			1.4	4.4	0.3	1.2	0.3	0.1
Manufacturing	(8.9)			1.1	3.3	0.9	3.5	0.1	*
F.I.R.	(11.1)			2.5	5.8	0.6	2.1	0.1	*
Vacant lots	3.1					0.1	0.5	1.9	0.6
Percent of Total									
Boston residents	63.7	35.6	17.5		21.8	3.1	11.8	7.5	2.3
Non-residents	35.9								
<u>Netzer Case 2</u>									
Residential property	41.1								
Owner-occupied	(13.4)	13.4							
Rental	(27.7)	27.7							
Non-residential	55.4								
Retail	(27.7)			16.6	11.1	0.3	1.2	0.3	0.1
Wholesale	(7.7)			1.4	4.4	0.2	0.7	*	*
Manufacturing	(8.9)			2.0	6.0	0.6	2.1	0.1	*
F.I.R.	(11.1)			2.5	5.8	0.1	0.5	1.9	0.6
Vacant lots	3.1								
Percent of Total									
Boston residents	67.1	41.1	22.5		27.3	1.2	4.5	2.3	0.7
Non-residents	37.5								

Sources: Table III-2 and discussion of shifting and exporting of local property taxes in Chapter III, pp. 104-131.

TABLE A - 3
PROPERTY TAX SUMMARY - ORR CASE

	Percent of Base	Consumers of Housing Services	Who Bears Final Burden-Percent of Total Tax		Owners of Boston Land and Enterprise Corporate Non corporate	Boston Residents	Other Residents	Other
			Consumers of Goods Boston Residents	+ Services				
Residential property								
Owner-occupied	41.1							
Rental units	(13.4)	13.4						
Non-Residential	(27.7)	4.9			1.8		6.7	10.9
Property	55.4							3.4
Retail	(27.7)							
Wholesale	(7.7)		2.7		2.6		9.9	8.1
Manufacturing	(8.9)		0.3		1.1		4.1	0.9
F.I.R.	(11.1)		0.3		1.6		6.1	0.1
Vacant lots	3.1		0.6		1.8		6.9	0.4
					0.1		0.5	1.9
								0.6
Boston residents	53.5	18.3	3.9		9.0		34.2	22.3
Non-residents	46.1			4.8				7.1

Sources: Table III-2 and discussion of shifting and reporting of local property taxes in Chapter III, pp. 104-131.

